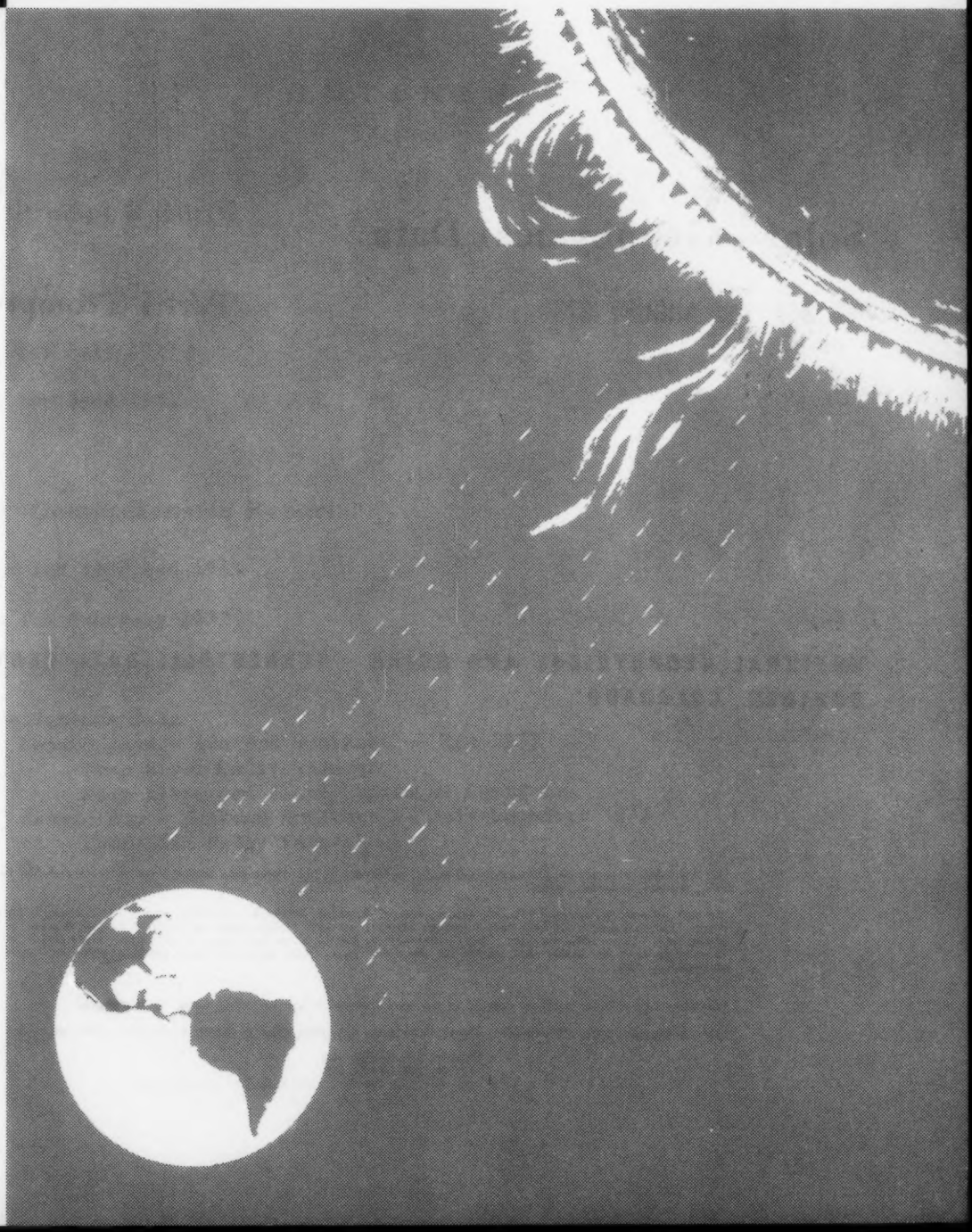
A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

SOLAR-GEOPHYSICAL DATA
(prompt reports)

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Data Service

AUGUST 1973



NUMBER 348-PART I
DATA FOR
JULY 1973
JUNE 1973

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Robert M. White. Administrator
ENVIRONMENTAL DATA SERVICE
Thomas S. Austin, Director

Solar - Geophysical Data

NO. 348 AUGUST 1973

Part I (Prompt Reports)

DATA FOR
JULY 1973
JUNE 1973

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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SOLAR - GEOPHYSICAL DATA

No. 348

Issued in two parts

Hope I. Leighton, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

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For explanations of the data contained herein see "Descriptive Text" published as supplement to February 1973 "Solar-Geophysical Data" (Number 342).

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JULY 1973

	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT	
			NO.	TYPE INCLUDING FLARE ACTIVITY EXPECTED
01	0400		01573	MAGALERT 01/02
			01574	SOLALERT PIANO N13E61 ERUPTIVE ONE QUIET
02	0400		02575	MAGSTORM ENDS 01/13XX SOLNIL THREE QUIET
03	0400			SOLNIL TWO QUIET
04	0400			SOLNIL N13E24 ERUPTIVE TWO QUIET
05	0400			SOLNIL N13E11 ERUPTIVE TWO QUIET
06	0400		06576	MAGALERT 07/15 RECURRENCE N12W05 ERUPTIVE TWO QUIET
07	0400		07577	MAGALERT 07/15 RECURRENCE N03E04 ERUPTIVE TWO QUIET
08	0400		08578	MAGALERT 08/15 RECURRENCE N00W08 ERUPTIVE THREE QUIET
09	0400		09579	MAGALERT 09/15 RECURRENCE MINOR N13W44 ERUPTIVE TWO QUIET
10	0400		10580	MAGALERT 10/15 RECURRENCE MINOR N11W58 ERUPTIVE ONE QUIET
11	0400			SOLNIL N13W74 ERUPTIVE ONE QUIET
12	0400			SOLNIL N13W87 ERUPTIVE ONE QUIET
13	0400			SOLNIL ONE QUIET
14	0400			SOLNIL TWO QUIET
15	0400			SOLNIL THREE QUIET
16	0400		16581	MAGALERT 16/18 TWO QUIET
17	0400		17582	MAGALERT 18/19 ONE QUIET
18	0400			SOLNIL FOUR QUIET
19	0400			SOLNIL N14W60 ERUPTIVE THREE QUIET
20	0400			SOLNIL FOUR QUIET
21	0400			SOLNIL NO SUNSPOT OBSERVED
22	0400			SOLNIL ONE QUIET
23	0400			SOLNIL TWO QUIET
24	0400			SOLNIL NO VISIBLE SUNSPOTS
25	0400			SOLNIL ONE QUIET
26	0400		26583	MAGALERT 26/28 RECURRENCE MINOR SOLNIL TWO QUIET
27	0400		27584	MINOR MAGSTORM BEGINS 26/03XX SOLNIL ONE QUIET
28	0400		28585	MAGSTORM EXISTS MINOR ONE QUIET
29	0400		29586	MAGSTORM ENDS 28/12XX SOLNIL ONE QUIET
	1337	BOULDER SOFLARE 2N N15E50 IN PROGRESS ASSOCIATED WITH DISAPPEARING FILAMENT TENFLARE 150 UNITS 29/1318Z IN PROGRESS		
30	0400			SOLNIL ONE QUIET
31	0400		31587	MAGALERT 01/02 ONE QUIET
	0756	BOULDER MAGSTORM BEGINS 31/0545Z WITH POSSIBLE SUDDEN COMMENCEMENT K INDICES FOR 31/0300-0600Z AND 0600-0900Z EQUAL 5		

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

	1972 FINAL					1973 PROVISIONAL						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	103	127	70	75	40	45	7	40	65	24	8	26
2	93	99	65	67	31	53	17	38	79	46	8	25
3	89	79	73	49	28	55	22	35	93	64	16	29
4	85	78	73	30	24	60	21	32	93	77	14	24
5	93	80	67	23	21	72	41	22	75	92	7	32
6	95	81	57	19	18	83	32	32	75	68	16	44
7	65	73	54	8	24	66	34	38	76	82	37	46
8	60	71	52	7	29	60	53	50	71	52	34	44
9	59	59	34	14	42	70	60	53	68	30	28	34
10	47	46	30	12	53	55	61	67	65	25	35	30
11	31	43	34	30	61	52	59	69	62	26	60	23
12	30	36	23	33	64	32	80	92	46	18	58	14
13	55	32	15	30	67	35	83	79	41	7	52	15
14	40	37	8	27	69	15	85	78	37	7	51	9
15	42	45	14	21	71	10	74	73	35	25	46	16
16	57	53	34	25	66	11	54	64	29	33	41	9
17	59	44	30	32	71	27	36	52	16	34	34	22
18	57	38	28	28	58	42	28	44	15	41	18	36
19	57	33	44	42	49	47	18	34	32	42	34	23
20	60	47	60	58	54	60	30	23	42	32	46	8
21	62	60	69	65	67	62	31	20	45	52	75	8
22	85	69	73	69	59	62	25	30	67	53	61	14
23	79	65	85	79	57	60	33	37	72	47	48	8
24	82	77	94	77	48	50	38	29	73	57	48	9
25	71	82	105	65	43	39	48	27	67	64	47	14
26	79	78	111	57	39	27	37	23	67	46	43	8
27	93	77	113	55	34	8	36	32	67	51	38	9
28	118	67	134	61	26	14	36	43	60	32	33	10
29	147	70	83	47	25	7		46	54	23	51	17
30	141	75	93	43	29	16		58	42	21	33	11
31	137		93		37	13		56		17		22
MEAN	76.8	64.0	61.3	41.6	45.3	42.2	42.1	45.4	57.6	41.5	37.6	28.4

1972 yearly mean = 68.9

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

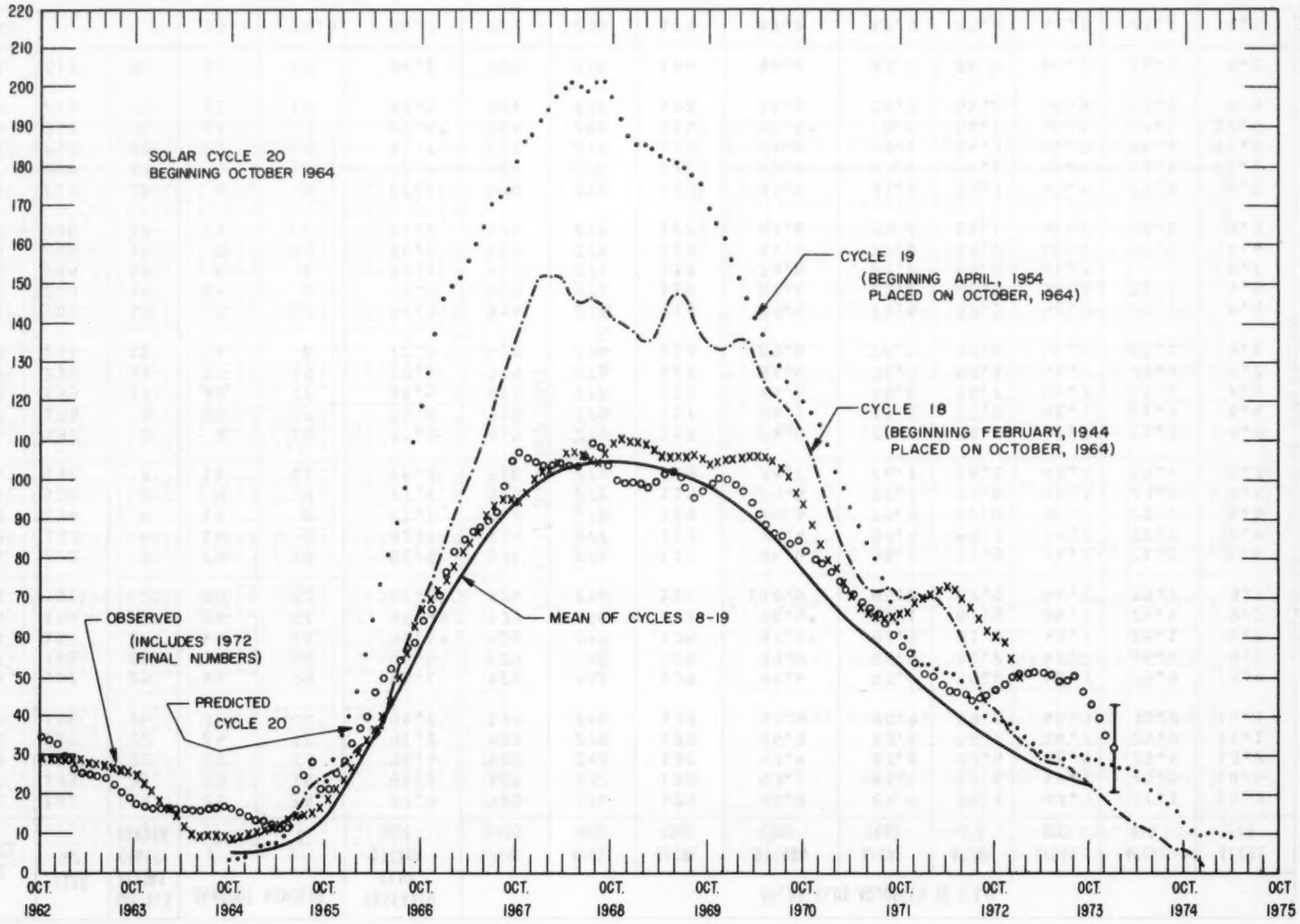
	1972					1973						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	156.3	144.3	114.7*	129.9	91.1	93.9	88.6	99.5	115.0	111.9*	85.2	90.9
2	153.4	139.7*	108.4*	121.8*	89.4	98.2	88.6	101.6*	118.1*	115.0*	83.1	93.1
3	147.1*	129.4*	107.3	113.9	85.2	105.1*	93.1	97.8*	129.4	117.3	81.5	93.5
4	146.0	122.8	103.3	115.8	82.3	109.3*	94.1*	96.6	122.3	115.9*	81.0	94.9
5	146.5	117.0*	100.6	102.6	80.4	113.3	94.3	94.8	117.7	115.0*	82.5	97.9
6	143.4	113.2	98.4	93.2	77.8	115.0	95.3*	98.9	112.7*	109.7	85.1	99.4
7	139.0*	110.4	96.1	85.7	87.1	112.3	98.5	92.2	110.3	103.4	85.3	99.9
8	125.3	115.9	97.2	82.5	91.6*	103.2	100.5	98.9*	121.0	100.0	87.4	97.6*
9	123.8	112.9	100.5	82.3	94.7*	103.7	100.9	104.7*	120.5	95.1	88.9	98.6*
10	118.6	107.2	94.7	84.7	97.2*	103.8	102.1*	105.6*	115.5	90.9*	91.0	100.5
11	113.3*	102.7	93.5*	88.3	105.1*	102.8	101.2	113.4	110.3*	87.0	92.9	94.0
12	107.6	100.6	94.7	88.7	108.9	103.5	104.6*	114.5	130.4*	86.8	93.6	85.4
13	101.7	94.6	94.5	86.7	111.2*	100.9*	104.7*	118.9	99.4*	85.2	96.3	80.3
14	97.9	99.3	97.0	85.1	114.8*	96.2	105.6	114.0*	92.7*	89.3	97.7*	79.5
15	97.6	103.4	102.1*	86.5	116.1*	94.6	104.7	107.1*	89.5	90.1	98.2	78.7
16	100.6	103.1	106.2	89.6	110.2	93.8	98.7	106.9	85.0	89.5	95.2	79.5
17	106.4	100.3	112.1*	91.5	111.9	94.2	94.2	101.5	82.1	91.4	89.8	79.1
18	109.6	102.6	111.8	94.6	112.4	95.3	92.7	94.9	80.9	95.4	91.4	83.6
19	116.2	106.2	117.1*	99.7	113.2	94.8	88.9	96.7*	82.8	99.4	99.2	81.6
20	117.8	113.2	122.2	109.4	111.4	98.3	89.4	91.0	86.4	104.7*	105.4	79.5
21	113.5	113.4*	132.8*	109.3*	113.4*	97.9	89.9	87.4	95.2	102.2	108.8	79.4
22	127.3*	119.4*	141.7	110.9*	107.9*	98.5	89.7	90.3	105.8	103.1	109.4	77.6
23	122.9*	125.2*	151.2*	115.3*	106.2	97.2	91.4	87.1	109.2	99.6	108.8	78.6
24	122.6	126.8	156.5	115.4*	101.1	96.9	93.6*	89.4	109.0*	104.5	106.1	81.6
25	127.8	126.3*	171.8	112.7	103.3*	95.6	97.2	90.0	109.2*	104.7	101.3	83.8
26	137.4*	122.5*	170.0*	108.6	97.7	95.3	95.6	88.6	110.0*	101.1	100.3	85.0
27	144.1	118.3*	167.6*	102.3	97.6	93.4	98.2	92.0	111.6*	99.9	94.8	85.5
28	147.2*	116.4	159.1*	97.5	91.9	91.7	100.9*	94.2	112.6	94.1	95.2	84.2
29	163.3*	115.2	B.I.P.	92.7	92.8*	91.4		99.0	109.5*	93.3	95.1	89.5*
30	163.3	118.5	144.6*	95.1	92.0*	89.7		102.7	106.2*	90.8	94.1*	86.1
31	154.2*		140.1*		94.3	87.7		110.3		87.2		86.6
MEAN	128.9	114.3	120.2	99.7	99.7	99.0	96.3	99.4	105.8	99.1	94.2	87.2

B.I.P. = burst in progress
* adjusted for burst

DAILY SOLAR INDICES

JULY 1973

JUL. 1973	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFCRL 15400	AFCRL 8800	AFCRL 4995	OTTAWA 2800	AFCRL 2695	AFCRL 1415	AFCRL 606	AFCRL 410	AFCRL 245
1	182	20	26	28	87.9	525	278	129	90.9	84.4	56.1	43.0	27.1	10.3
2	183	21	25	30	90.0	527	283	132	93.1	87.5	57.6	42.1	25.5	10.6
3	184	22	29	33	90.4	522	283	132	93.5	87.8	57.4	43.0	25.5	13.2
4	185	23	24	32	91.8	523	279	129	94.9	89.1	58.7	44.7	25.9	11.1
5	186	24	32	44	94.7	522	280	130	97.9	90.9	59.6	46.3	30.2	14.1
6	187	25	44	55	96.1	522	283	135	99.4	93.8	59.6	43.3	25.9	8.9
7	188	26	46	56	96.6	529	286	136	99.9	94.9	61.2	43.7	26.4	9.0
8	189	27	44	44	94.4*	528	287	136	97.6*	95.5	61.0	43.7	25.1	8.8
9	190	1	34	37	95.4*	533	296	142	98.6*	97.1	61.6	44.0	24.4	9.1
10	191	2	30	23	97.2	524	286	136	100.5	95.2	62.5	44.6	25.1	9.7
11	192	3	23	20	90.9	531	273	132	94.0	88.0	57.9	43.0	21.2	8.4
12	193	4	14	6	82.7	519	277	123	85.4	80.9	55.3	43.0	22.5	8.6
13	194	5	15	8	77.7	518	270	119	80.3	75.9	52.0	42.7	23.3	8.6
14	195	6	9	9	77.0	518	271	119	79.5	75.3	51.6	41.7	23.3	8.4
15	196	7	16	11	76.2	516	271	119	78.7	76.7	56.1	43.0	23.6	9.3
16	197	8	9	12	77.0	515	276	118	79.5	76.9	50.5	42.3	21.3	8.9
17	198	9	22	22	75.6	515	276	117	79.1	77.3	52.0	41.1	21.3	8.4
18	199	10	36	37	80.9	523	277	122	83.6	79.6	56.7	40.7	22.6	8.4
19	200	11	23	15	79.0	519	278	120	81.6	76.9	53.1	41.7	21.4	8.2
20	201	12	8	6	77.0	512	274	118	79.5	75.3	52.0	41.1	22.1	9.1
21	202	13	8	12	76.9	514	273	118	79.4	74.9	52.2	42.3	21.2	8.4
22	203	14	14	6	75.2	519	273	116	77.6	73.2	48.5	39.8	22.1	8.6
23	204	15	0	1	76.2	517	271	118	78.6	73.8	49.2	41.7		8.7
24	205	16	9	11	79.1	523	278	119	81.6	77.2	49.2	40.4	22.5	8.4
25	206	17	14	12	81.2	525	279	122	83.8	78.2	51.1	42.6	23.1	9.3
26	207	18	8	9	82.4	529	279	123	85.0	81.0	55.3	43.6	23.8	9.9
27	208	19	9	10	82.9	528	278	122	85.5	81.6	56.1	44.6	23.1	10.4
28	209	20	10	11	81.7	522	276	122	84.2	79.1	54.3	44.9	24.0	11.6
29	210	21	17	13	86.8*	523	280	124	89.5*	78.0	54.1	46.1	22.1	10.5
30	211	22	11	15	83.5	521	277	123	86.1	80.3	54.2	43.9	22.1	8.9
31	212	23	22	17	84.1	525	275	124	86.6	82.1	56.4	44.2	21.5	9.2
MEAN			20.4	20.8	84.5	522	278	125	87.2	82.5	55.3	43.0	23.7	9.5



PREDICTED AND OBSERVED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS

CYCLE 20

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1964										9.6	10.2	11.0
1965	11.7	12.0	12.5	13.6	14.6	15.0	15.5	16.4	17.4	19.7	22.3	24.5
1966	27.7	31.3	34.5	37.4	40.7	44.6	50.3	56.6	63.1	67.6	70.2	72.7
1967	75.0	78.8	82.2	84.6	87.4	91.3	94.1	95.3	95.3	95.0	97.1	100.6
1968	102.6	102.9	104.7	107.2	107.6	106.6	105.2	104.8	107.0	109.9	110.6	110.1
1969	110.0	109.6	108.0	106.4	106.2	106.1	105.8	106.4	105.4	104.1	104.6	104.9
1970	105.6	106.0	106.2	106.1	105.8	105.3	103.8	101.0	97.2	93.9	89.4	84.1
1971	80.4	77.8	74.4	70.9	68.1	66.7	65.4	64.6	65.8	66.2	66.8	69.4
1972	70.8	71.2	72.4	73.4	72.9	70.5	68.1	65.4	62.0	60.3	58.5	54.8
1973	50.3	48.9 (3)	47.3 (4)	45.4 (6)	44.0 (8)	42.2 (8)	40.8 (9)	40.0 (10)	38.9 (12)	37.1 (12)	35.1 (12)	33.3 (12)
1974	32.0 (11)	30.9 (12)	30.0 (12)	29.2 (13)	28.6 (13)	27.5 (14)	26.2 (14)	24.7 (13)	22.8 (13)	21.2 (13)	19.6 (13)	18.4 (13)
1975	17.4 (13)	16.2 (12)										

For each month, the upper figure is the observed or predicted Zürich smoothed sunspot number. The lower figure in parenthesis is the corresponding absolute value of the 90% prediction interval, an indication of the uncertainty above and below the predicted number. Observed numbers are those with no prediction intervals. The observed smoothed sunspot numbers are based on final Zürich numbers through 1972.

The predicted sunspot numbers are derived from a regression analysis based on cycles 8 through 19. Tests indicate that earlier cycles are from a different statistical population. From July 1968 - February 1970 a regression analysis based on cycles 1 through 19 was used because it had not then been proven that two populations exist.

SOLAR FLARES

PARTIAL LISTING

Solar Flares for which at least one observatory has assigned a numerical importance of "1" or greater.

JULY 1973

OBSERVATORY	DATE JUL	OBSERVED UT START	OBSERVED UT END	OBSERVED UT MAX. PHASE	LOCATION APPROX. LAT.	LOCATION APPROX. MER. DIST.	LOCATION CENTRAL DISTANCE	LOCATION MCMATH PLAGE REGION	LOCATION CMP DAY	DURATION — MIN.	IMPORTANCE	OBS. COND.	OBS. TYPE	MEASUREMENTS TIME — UT	MEASUREMENTS MEAS. AREA Sq. Deg.	MEASUREMENTS CORR. AREA Sq. Deg.	MEASUREMENTS MAX. WIDTH Hα	MEASUREMENTS MAX. INT. %	REMARKS
CRON	04	0201	0238	0211	S08	E12	.282	12414	5.0	37	1N			0211	2.06				
PALE	04	0202	0225D	0218	S07	E13	.284		5.1	23D	SB	3	C		1.71				DE
CATA	06	1350	1420	1355	N01	E09	.162		7.3	30	SB	3		1355	1.16	1.17		(229)	
UPIC	06	1351E	1351D		N01	E10	.178		7.3		SN		P	1351	.21				D
WEND	06	1352E	1410D		N01	E11	.195	12427	7.4	18D	1N		V		4.13				
HUAN	06	1353	1425		N03	E10	.174		7.3	32	SN	2	P	1400	.83	.84			E
CANR	06	1354	1420	1358	N02	E09	.158		7.3	26	SN		V		1.13				
BOUL	06	1355	1413	1402	N03	E09	.156		7.3	18	SF		V	1402	1.10	1.10			
RAMY	06	1356E	1415	1400	N03	E08	.139		7.2	19D	SN	3	C		.46				DE
MCMA	06	1356E	1403D		N02	E09	.158	12427	7.3	7D	SB		P	1358	.62	.60			E
ATHN	06	1357E	1402D	1357U	N01	E08	.145		7.2	5D	SN	2	V		1.32				F
TEHR	06	1406E	1410	1406U	N02	E13	.226		7.6	4D	SN	3	V		.15				F
MITK	08	0212	0222	0217	S06	W47	.742	12414	4.6	10	1F		C	0217	1.75	2.60			E
MCMA	08	1145E	1214D		N13	W37	.612	12417	5.7	29D	SB		P	1155	.83	1.08			E
RAMY	08	1147	1212	1200	N14	W36	.602		5.8	25	SN	3	C		.99				F
ATHN	08	1150E	1217	1155	N10	W37	.605		5.7	27D	SN	4	V		1.82				U F
CANR	08	1150	1215	1151	N12	W36	.596		5.8	25	SB		V		1.03	1.20			
BOUL	08	1154E	1243D	1154E	N12	W37	.610	12417	5.7	49D	1N		V	1154		3.00			
TEHR	08	1155	1217	1155	N10	W37	.605		5.7	22	SN	4	V		1.82				U F
CATA	09	0505E	0650D	0610	N13	W48	.747	12417	5.7	45D	1B	3		0610	1.73	2.61		(229)	
TEHR	18	0217E	0311D	0240	N15	W46	.724		14.6	54D	SB	3	C		.52				F
PALE	18	0240E	0251D	0244U	N15	W44	.701		14.8	11D	SN	2	C		1.08				F
MANI	18	0241E	0255	0241U	N13	W47	.733	12431	14.6	14D	1N	2		0241	1.55	2.28			E
TEHR	18	0300E	0309	0300U	N13	W45	.709		14.8	9D	SN	3	V		.15				DE
MANI	18	0301E	0315	0302	N13	W47	.733		14.6	14D	SN	2		0302	.41	.61			F
CATA	24	0910	0950	0930	S03	W90	1.000	12448	17.6	40	2F	3		0930	2.90			(126)	
MANI	26	0146	0208	0150	S12	E88	1.000		1.7	22	SN	2		0150	.52	1.64			X
MITK	26	0148	0200	0152	S13	E90	1.000	12460	1.8	12	1F		C	0152	.52				D
MITK	25	0507	0516	0508	N13	E90	1.000	12461	2.0	9	1F		C	0508	.52				DH
TEHR	29	1310	1517D	1328	N13	E50	.764		2.3	127D	2B	3	V		4.95				S U
BOUL	29	1312E	1525D	1328	N13	E45	.707	12461	1.9	133D	4N		V	1328	24.00	33.60			
MCMA	29	1312	1900D	1329	N12	E43	.681	12461	1.8	348D	3N		C	1329	15.47	21.30			FGHLSU
RAMY	29	1313	1700D	1327	N14	E45	.708		1.9	227D	3B	4	C		15.71				U F
HUAN	29	1315	1817	1344	N15	E44	.698	12461	1.9	302	3N	2	C	1344	10.11	14.12			GSU
CANR	29	1315	1515	1331	N15	E45	.709	12461	1.9	120	3N		V	1331	14.44	20.00			
CANR	29			1325										1325	10.31	15.00			
CATA	29	1315	1422D	1331	N13	E44	.695	12461	1.9	67D	3B	3		1331	16.81	23.35		(324)	
ATHN	29	1332E	1525	1332U	N15	E45	.709		1.9	113D	2B	1	V		5.28				U F
UPIC	29	1441E	1715D		N14	E43	.684	12461	1.8	154D	3B		P	1441	12.20				U

"Remarks":
A = Eruptive prominence, base at >90°
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No spots visible in the neighborhood.
H = Flare with high velocity dark surge.
I = Very extensive active region.
J = Plage with flare shows marked intensity variations.
K = Several intensity maxima.
L = Filaments show effects of sudden activation.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H or K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line.
S = Brightening follows disappearance of filament (same position).
T = Region active all day.
U = Close and somewhat parallel bright filaments (|| or Y shape).
V = Occurrence of an explosive phase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα emission.
Y = Onset of a system of loop-type prominences.
Z = Major sunspot umbra covered by flare.

Note: Catania and Capri-S express Maximum Intensities in percent of the local undisturbed chromosphere instead of percent of the local continuum. Parentheses are used to indicate this difference.

SOLAR FLARES

Date, time (UT) and coordinates of Subflares not included in preceding table.

JULY 1973

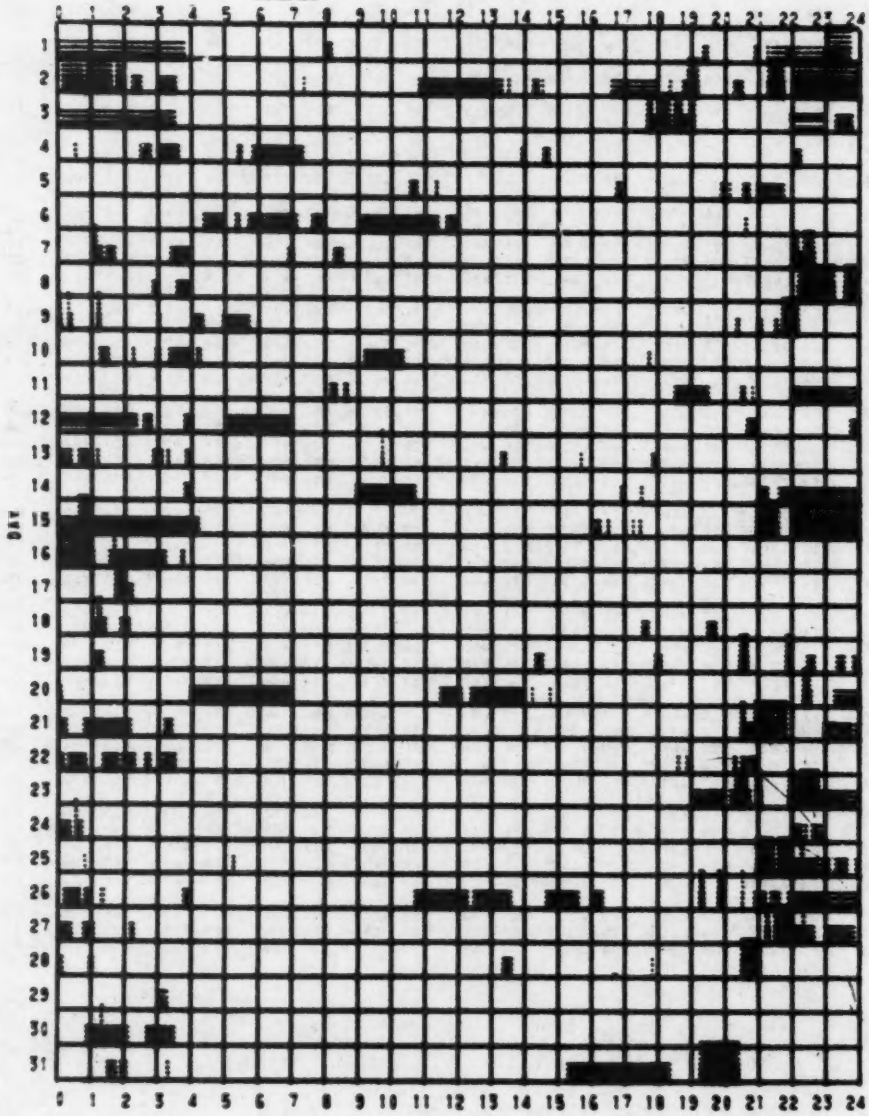
01 0012 N12 E61	01 0405E N12 E59	01 0753 N13 E64	01 0754 N14 E58	01 0755 N11 E63	01 0756 N12 E61
01 1603 S08 E42	01 1839E N14 E52	01 2043 N10 E90	01 2132E S07 E44	02 0734 N13 E47	02 1809E N05 E31
02 2105 S07 E32	02 2108E S06 E34	02 2332E S06 E33	03 0146 S06 E31	03 0414E S07 E30	03 0627E N10 E32
03 0721 S06 E27	03 0722E S07 E27	03 0734E S07 E27	03 1106 S08 E20	03 1350 N13 E30	03 1539 N15 E24
03 1540 N14 E25	03 1542E N14 E24	03 1922 N15 E22	03 1923 N15 E23	03 1928E N15 E23	03 1935 N15 E22
04 0005E N11 E20	04 0201	04 0929 N15 E15	04 0930 N14 E15	04 0930 N14 E15	04 1153 N12 E17
04 1228E N14 E17	04 1228 N15 E12	04 1509 N16 E13	04 1529 S06 E09	04 1603E N12 E16	04 1718 S06 E07
04 1821 N16 E11	04 1821 N15 E12	04 1821 N15 E11	04 1925E S07 E07	04 1948E S07 E07	04 2125 N15 E11
04 2249E S07 E03	05 0114 N11 E11	05 0120E N12 E11	05 0229 N16 E08	05 0230E N15 E07	05 0254 S09 E03
05 0510 S09 E02	05 0640 N16 E05	05 0645E N15 E05	05 0832 N12 E04	05 1344 N16 E06	05 1912 N16 E02
05 2201 S07 W12	05 2202E S07 W11	05 2205E S06 W13	05 2251 S08 W12	06 0040E S07 W10	06 0543 S06 W10
06 0632 S06 W11	06 0700 N00 E15	06 0725 S07 W14	06 0726 S07 W11	06 0727 S07 W13	06 0728 S06 W13
06 0728 S05 W14	06 0729E S06 W12	06 0733E S06 W12	06 0733E S06 W12	06 0803 N02 E13	06 0838 N02 E13
06 0914E N01 E11	06 1213 N02 E11	06 1215E N02 E11	06 1215 N01 E10	06 1609E N03 E08	06 1609 N03 E08
06 1610 N03 E07	06 1739 N03 E07	06 1910 N02 E07	06 1916E N02 E07	06 1925 N01 E06	07 0004E N13 W13
07 0415 S08 W32	07 0436E S06 W34	07 0514 S05 W26	07 0610E N11 W23	07 0612E N10 W23	07 0618E N11 W22
07 0800 N01 E00	07 0819E N02 E01	07 0850 N01 W01	07 0850E N01 W01	07 0853E N01 E00	07 0853E N01 E01
07 0947E N01 E01	07 0947E N01 W02	07 0950 N01 W01	07 1112E N01 E01	07 1125 N12 W27	07 1130 N12 W27
07 1229 N02 W03	07 1230 N01 W04	07 1231 N00 W02	07 1235E N01 W04	07 1238E N02 W03	07 1340 N01 W04
07 1341 N02 W04	07 1404E N02 W03	07 1445E N01 W04	07 1448 N01 W05	07 1450 N01 W05	07 1457E N03 W04
07 1535 N01 W05	07 1607 N01 W05	07 1607 N01 W04	07 1608 N01 W06	07 1610E N02 W05	07 2016 N12 W32
07 2017E N14 W32	07 2027 N12 W33	07 2051 N11 W26	07 2053 N12 W28	07 2127 N01 W07	07 2243E N02 W08
07 7193 N10 W24	08 0006E N02 W10	08 0010 N02 W09	08 0010E N02 W09	08 0126 N14 W31	08 0205 N02 W11
08 0209E N12 W30	08 0246E N12 W33	08 0258E N14 W35	08 0310E N01 W10	08 0319 S07 W46	08 0512 N02 W12
08 0513E N00 W13	08 0652 N01 W13	08 0653 N02 W13	08 0655 N02 W13	08 0656 N02 W13	08 0812 N12 W33
08 0812 N11 W37	08 0812 N12 W36	08 0950 N16 W40	08 1105E N12 W41	08 1517 N11 W38	08 1518E N10 W38
08 1530E N13 W40	08 1541 S06 W44	08 1624 S08 W51	08 1625E N07 W51	08 1628 S06 W50	08 1631E S07 W51
08 1701 N11 W40	08 1757 N11 W40	08 1818 S06 W54	08 1820 S06 W53	08 1820E N07 W52	08 1825E S06 W53
08 1844 N11 W40	08 1845E N12 W40	08 1905 N09 W40	08 1907 N10 W39	08 1911E N10 W41	08 1937 N11 W42
08 2002 N12 W41	08 2003E N10 W42	08 2004 N11 W39	08 2050 N11 W43	09 0355E N13 W46	09 0357 N12 W47
09 0505 N12 W45	09 0505 N12 W46	09 1200 N11 W47	09 1208E N13 W53	09 1622 N12 W55	09 1624 N12 W57
09 1625 N09 W57	09 1627E N12 W53	09 1635E N09 W56	09 1638 N11 W58	09 2049 N11 W58	09 2141E N13 W56
10 0133 N02 W37	10 0216E N12 W60	10 0218E N13 W58	10 0219 N12 W61	10 0325E N14 W58	10 0510E N11 W60
10 0542E N10 W68	10 0550E N14 W59	10 0551 N18 W60	10 0700 N10 W62	10 0705 N10 W60	10 0705E N10 W61
10 0709E N13 W65	10 0741E N08 W64	10 1354 N11 W64	10 1354 N12 W65	10 1357E N11 W66	10 1603 N10 W68
10 1607E N08 W65	10 1607E N07 W69	10 2125 N12 W71	10 2231 N16 W68	10 2244E N11 W70	11 0635E N10 W73
11 0932E N00 W54	11 1824E N07 W80	11 1937E N07 W80	12 1436 N13 W90	13 0351E S20 W02	16 0252E S10 W58
16 0534 S12 W58	16 0632 S12 W58	16 0702E S11 W60	16 0930E S10 W58	16 1019 S18 E90	16 1242E S13 W67
16 1256E S12 W61	16 1302E S10 W58	16 1800E S05 E19	17 0525E S12 W73	17 0745 S11 W73	17 0831 S13 W74
17 1050 N13 W35	17 1228 N17 E58	17 1240 N20 E57	17 2135 N16 W50	18 0408 N13 W48	18 0411 N15 W44
18 0413E N13 W47	18 0624 S10 W45	18 0640 N13 W45	18 0643E N13 W48	18 0646E N12 W47	18 0729 N13 W49
18 0730E N13 W48	18 1030E S12 W90	18 1551 S12 E31	18 1833 S17 E54	18 1952 S06 E25	19 0821E S13 W58
19 1644E S22 W48	19 1807 S14 W65	19 2303E S06 W28	20 0026 N17 E23	20 0029E N17 E24	20 1425 S07 W37
20 1525 S09 W75	20 1712 N14 W86	20 1750 N13 W83	20 1830 N14 W87	21 1021 S07 W48	21 2028 S02 W52
22 0449 N08 W17	22 0635 N17 W08	22 0850 S01 W58	23 1125 S07 W78	23 2005E N16 W30	24 0519E S08 W43
25 2016E N08 W14	26 0000 N11 E88	26 0005 N17 E90	26 0035 N01 E80	26 1344 N09 W24	26 1355E N07 W25
26 1355 N08 W25	26 1515E N16 E85	26 1802E N06 W17	27 0740E S04 E55	27 0830 S07 E56	27 0858 N13 E70
27 0951 N13 E70	27 0953 N10 E68	27 0955 N12 E68	27 0955 N12 E68	27 0955 N08 E68	27 1021 S05 E58
27 1025 S07 E58	27 1339 N16 E72	27 1340 N09 E70	28 0150 N27 E79	28 0405 N27 E79	28 2124E S05 E33
29 0208E S05 E29	29 0212E S06 E31	29 0241 S05 E29	29 0402 S05 E28	29 0408E S02 E27	29 0408E S03 E30
29 0456 S05 E30	29 0505E S07 E33	29 0710 S10 E30	29 0719 S06 E31	29 0720E S05 E28	29 0805 S07 E26
29 0930 S08 E25	29 1718 S04 E21	29 2109 S07 E21	30 0114 N11 E90	30 0118 N20 E90	30 0906 N06 E86
30 1038E S12 E13	30 2322E S07 E08	30 2325E S04 E07	31 0435 S06 E04	31 0439 S05 E04	31 0759 S13 E90
31 0852 S06 E03	31 2218 S10 E90				

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

JULY 1973

HOUR-UT



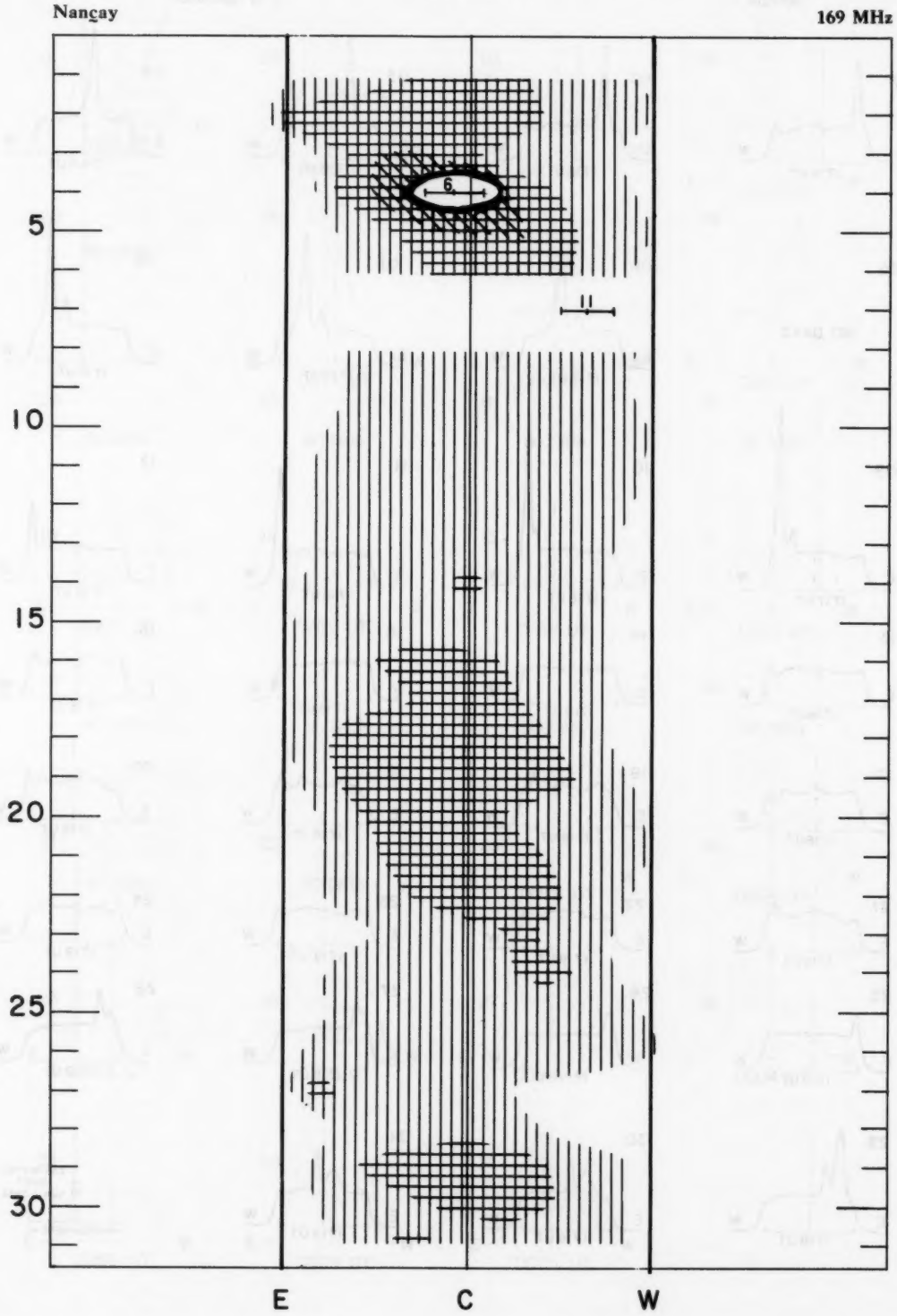
Observatories included in total patrol:

Athenes	Gran Canaria	Manila	Monte Mario	Tehran
Bucharest	Herstmonceux	McMath-Hulbert	Palehua	Upice
Carnarvon	Huancayo	Mitaka	Ramey	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JULY 1973



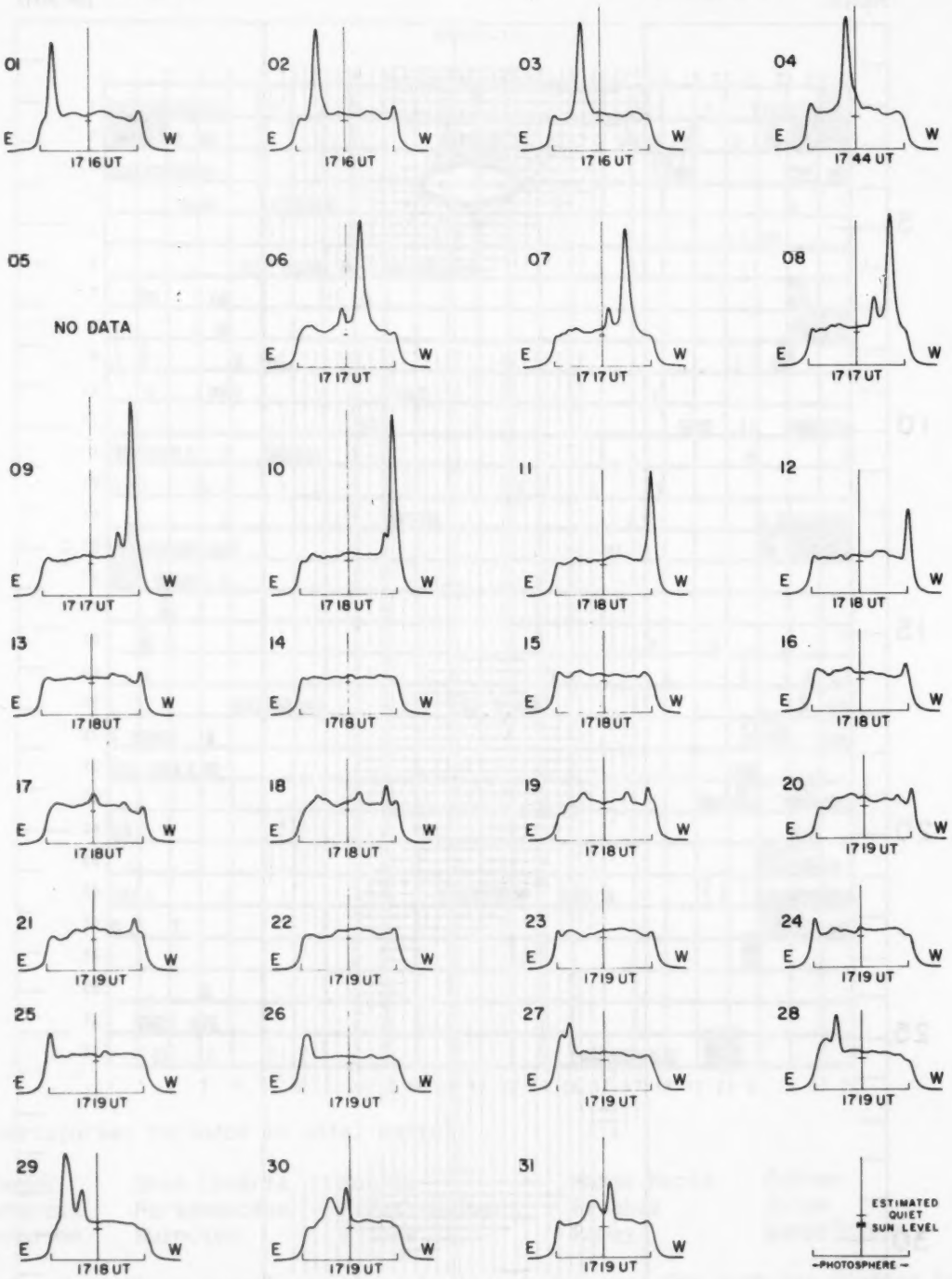
14
Jul 73

EAST-WEST SOLAR SCANS

July 1973

ALGONQUIN RADIO OBSERVATORY
CANADA

10.7 cm
Fan-Beam with 1.5 minutes of arc
E-W Resolution



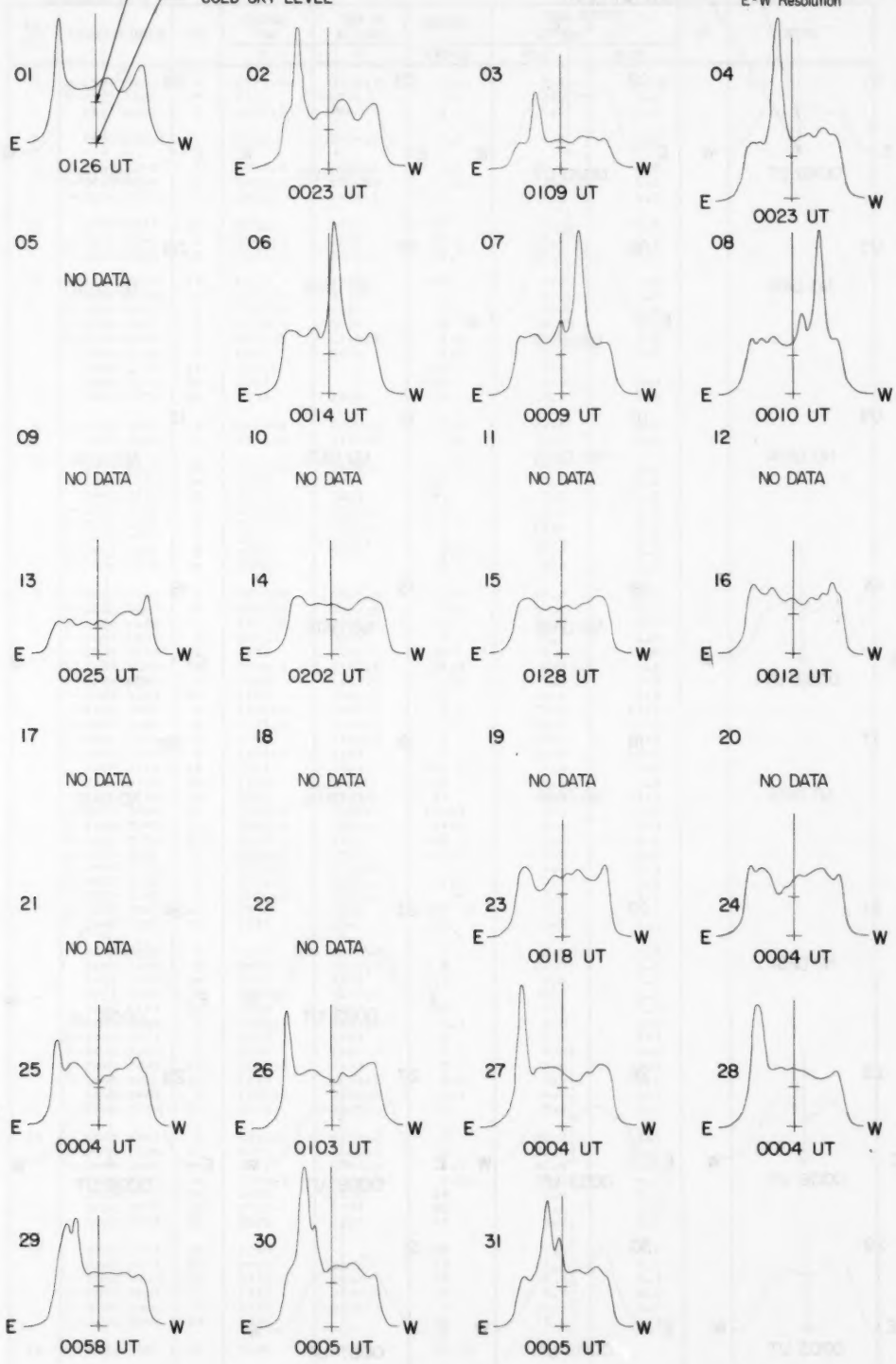
EAST-WEST SOLAR SCANS

JULY 1973

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL
COLD SKY LEVEL

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



16
Jul 73

EAST-WEST SOLAR SCANS

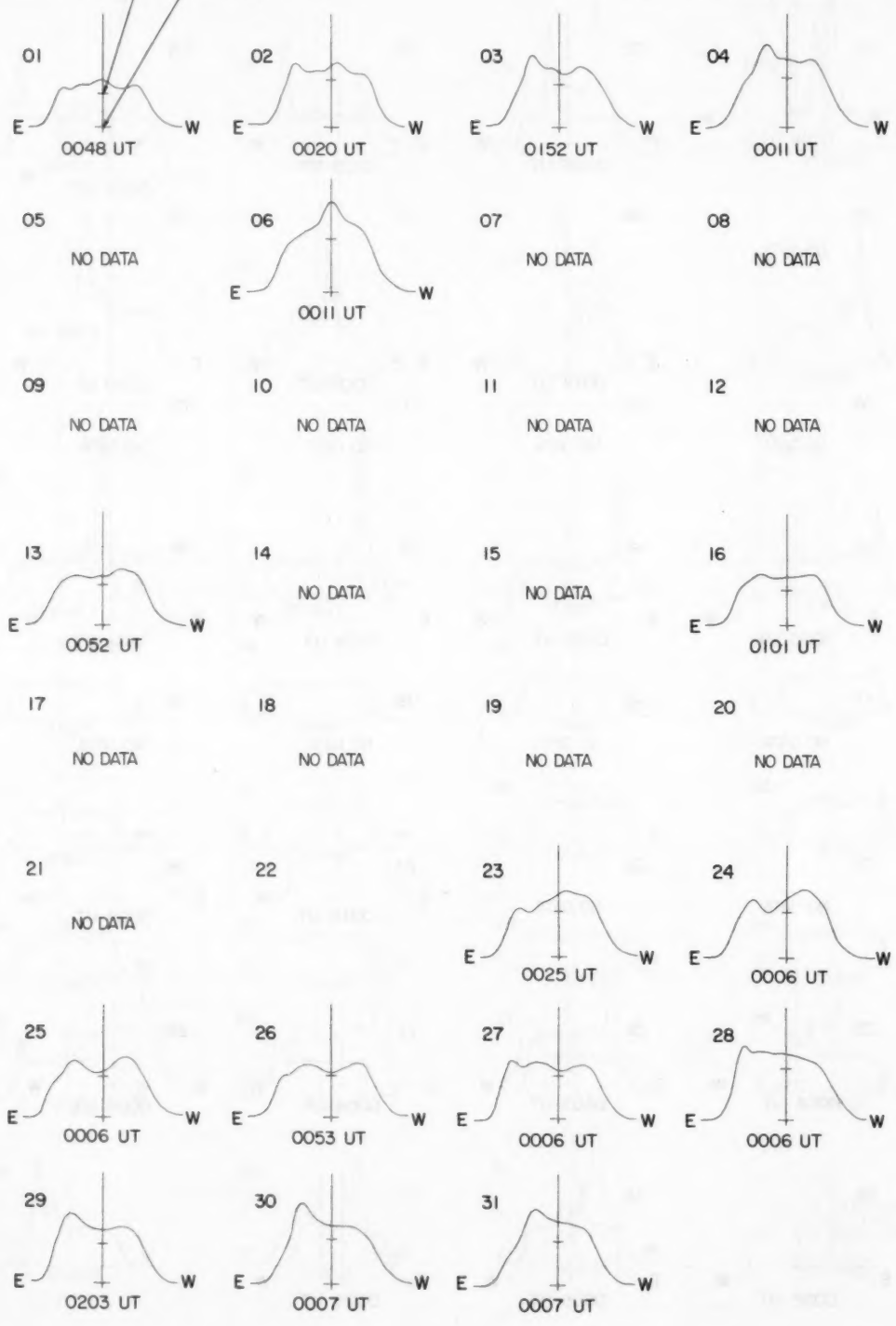
JULY 1973

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL

COLD SKY LEVEL

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
JULY 1973

JUL. 1973	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
1	2695	MANI	1	0755.4U	0755.7U	2.4U	5.4U	1.3D		RFI
	2695	CANR	8	0755	0756	1.5	7.0	3.0		
	2695	BOUL	3	1830.5	1832	2	5.0	2.0		
2	2695	BOUL	45	2332	2334.5	3.5	4.0	1.0		
3	8800	SGMR	3	1932.3	1932.5	.6	20.4	4.0		
	2695	SGMR	1	1932.3	1932.4	.6	3.8	1.0		
	2800	OTTA	1	1932	1932.5	1	1.6	0.8		
4	2695	PENT	20	0000	0005	85	1.4	0.8		
	2695	MANI	4	0202.5	0205	17.6	22.2	8.6		
	2695	CRON	45	0202.5	0204.5	20.5	15.0	5.0		
5	2695	PENT	21	0112	0118	33	2.8	1.4		
	2695	CRON	3	0112.5	0115	4	6.0	2.0		
	2695	MANI	1	0114.4	0115	1.2	4.9	2.4		
	2695	PENT	1	0114.5	0115	2	4.0	2.0		
	2695	BOUL	3	0114.5	0115.5	2.5	6.0	2.0		
	2695	CANR	3	0935	0938	6.5	3.0	1.0		
	2800	OTTA	24	1300		40	1.6			
	2800	OTTA	20	1905		120	1.6	0.9		
	2800	OTTA	20	2155	2205	35	2.6	0.8		
6	8800	MANI	4	2329.4	2329.5	1.6	34.8	6.2		
	2695	MANI	1	2352.3	2352.5	.6	4.1	1.4		
7	2695	CRON	45	0513.5	0514.5	3.5	5.0	2.0		
	2800	OTTA	20	1200	1240	115	1.6	0.8		
	2800	OTTA	22	1450	1615	130	2.0	1.1		
	8800	SGMR	1	2052.4	2052.6	2	6.1	2.0		
	2695	SGMR	3	2051.7	2052.6	2.7	22.4	7.3		
	2800	OTTA	3	2051	2051.5	3	24.4	6.1		
	2695	BOUL	8	2052	2053	2.5	24.0	9.0		
	2800	OTTA	29	2054		22	2.8	1.2		
8	8800	MANI	3	0810.9	0814.1	5.5	14.2	6.1		
	2695	MANI	4	0810.9	0814.2	5.5	17.6	6.3		
	2695	CANR	4	0811.5	0814.5	10	16.0	5.0		
	2695	CRON	3	0811	0814	7	12.0	4.0		
	2800	OTTA	21	1135	1150	85	5.4	2.0		
	2695	SGMR	21	1146.3	1150.8	25.9	4.8	1.6		
	2695	CANR	3	1150	1151.5	1.5	3.0	1.0		
	8800	SGMR	21	1152	1201.2	15	6.1	2.8		
	8800	SGMR	3	1155.4	1156.2	3.6	70.5	23.1		
	2695	SGMR	4	1155.4	1156.3	3.1	35.7	11.6		
	2800	OTTA	3	1155	1156.1	3	38.4	12.8		
	2695	CANR	8	1155.5	1157	6	42.0	16.0		
	2800	OTTA	22	1515	1543	105	5.8	2.9		
	2800	OTTA	20	1730	1740	40	3.6	1.8		
	2800	OTTA	32	1825	1855	38	-2.6	-1.3		
	2695	SGMR	23	1859.8	2006.1	110.8	9.2	4.0		
	8800	SGMR	23	1900.6	1917.4	74.9	8.4	3.5		
	2800	OTTA	23	1903	1910	260	5.0	2.5		
	2695	BOUL	45	2002.5	2007	19.5	5.0	2.0		
	2800	OTTA	1	2003.5	2006.5	5	4.2	1.4		
	8800	SGMR	1	2006.3	2006.4	1.1	9.1	2.5		
	2695	SGMR	1	2006.3	2006.4	.4	2.6	1.0		
	2695	PENT	21	2330	0005	145 D	8.6			
	2695	PENT	20	2330	2340	15	2.8	1.4		
9	2695	PENT	1	0026	0026.2	1	2.6	0.9		
	2695	CRON	3	0508	0511.5	9	10.0	3.0		
	2800	OTTA	20	1255	1345	115	2.4	1.2		
	2695	SGMR	8	1337.7	1337.8	.3	33.2	11.1		
	2800	OTTA	21	1620	1650	190	6.6	3.5		
	2695	SGMR	1	1625.9	1627.6	5.1	5.0	2.0		
	2800	OTTA	2	1625	1628	5	5.4	2.7		
	8800	SGMR	2	1626	1627.7	5	8.4	4.0		
	2695	CANR	45	1626.5	1629	5	5.0	2.0		
	2695	BOUL	45	1627	1628.5	2.5	5.0	2.0		
	2695	CANR	3	1745.5	1746.5	1.5	6.0	2.0		
	2800	OTTA	20	1940	2010	70	3.4	1.7		
10	8800	MANI	3	0216.2	0217.8	7	22.2	8.1		
	2695	CRON	45	0701	0702.5	4	30.0	11.0		
	2695	CANR	45	0702	0703.5	2.5	42.0	13.0		
	8800	SGMR	4	1354.9	1356.9U	5.6U	16.2U	4.0U		
	2800	OTTA	20	1602	1630	38	1.4	0.7		
	2800	OTTA	20	1710	1735	92	1.6	0.8		
	2800	OTTA	20	1850	1855	45	1.2	0.9		
11	2800	OTTA	20	1430		130	1.6	1.0		
	2800	OTTA	20	2005	2012	13	1.4	0.7		
	2800	OTTA	20	2030	2040	20	1.4	0.7		
	2695	PENT	1	2322	2324.3	6	8.8	4.4		
	2695	BOUL	3	2323	2324.5	9	10.0	3.0		
	2695	PENT	29	2328		35	2.6	1.3		
12	2695	PENT	20	0130	0147	25 D	5.2			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JULY 1973

JUL. 1973	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
12	2800 OTTA	20	1110	1120	40	1.8	0.9		
	2695 BOUL	3	1519.5	1521.5	6	4.0	1.0		
	2800 OTTA	1	1520	1522	8	3.4	1.7		
	2695 CANR	3	1520.5	1523	8.5	3.0	1.0		
	2800 OTTA	29	1528		25	1.2	0.6		
17	2800 OTTA	24	2000		50	2.2			
20	2800 OTTA	20	1840	1900	60	1.8	1.0		
21	2695 CANR	3	0708.5	0710.5	5	7.0	3.0		
	2695 CANR	45	1859	1901	4	6.0	2.0		
23	2800 OTTA	24	1228		13	1.4			
	2800 OTTA	20	1300	1330	100	1.4	0.7		
	2800 OTTA	27	1453		28	1.0	0.8		
24	2695 BOUL	8	2226	2226.5	1.5	28.0	10.0		
	2695 BOUL	8	2229	2229.5	1	10.0	3.0		
	2695 BOUL	3	2234	2234.5	1	5.0	2.0		
26	2695 PENT	2	0000.9	0001.8	2	2.4	1.2		
	2695 BOUL	3	0001.5	0002.5	1.5	3.0	1.0		
	2695 CANR	45	1926	1926.5	3	12.0	4.0		
	2695 CANR	45	1926	1928	3	12.0	4.0		
27	2695 BOUL	3	0127	0127.5	1.5	3.0	1.0		
	2800 OTTA	20	1050 E	1105	75 D	2.2			
	2800 OTTA	26	1530		100	1.8			
28	8800 SGMR	3	2112.2	2112.3	.3	18.5	6.8		
	2695 SGMR	1	2112.3	2112.4	.2	3.2	1.6		
29	2695 BOUL	45	1305	1335.5	251.5	79.0	19.0		
	2800 OTTA	25	1312		335	5.8			
	2800 OTTA	21	1312	1350	335	55.0	16.8		
	2695 CANR	45	1314.5	1335	181.5	136.0	30.0		
	8800 SGMR	22	1319.1	1351.1	133.1	64.0	16.0		
	2695 SGMR	45	1318.7	1324.7	22.4	78.1	36.3		
	2695 SGMR	45		1333.6		145.0			
	2800 OTTA	46	1319	1334	30	98.0	33.0		
	2800 OTTA		1319	1325	10	53.0			
	2800 OTTA		1329	1334	20	98.0			
	2695 SGMR	29	1341.1	1341.1	168.9U	75.5	38.2		
	2800 OTTA	20	2112	2130	33	1.4	0.7		
30	2800 OTTA	20	2031	2032	10	1.2	0.6		
31	2800 OTTA	27	1055		60	1.2			
	2800 OTTA	27	1230		315	1.4			

Observatories:

BOUL = Boulder
CANR = Canary Islands
CRON = Carnarvon
OTTA = Ottawa ARO
MANI = Manila
PENT = Penticton
SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

PIONEER IX

JULY 1973

DATE JULY 1973	TIME (UT)	ESP (°)	SOLAR WIND[1] U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (Days)	IP E-FIELD[2] 400 Hz (mv)	IP MAGNETIC FIELD[3] /B/ (Gamma)	φ (°)	Condition	COSMIC RAY PROTONS[4] (particles/sec) >13.9 Mev	>40 Mev
2	1200	-033.29	653	1.0	-----	-2.0676	0.261	9.7	146	very quiet	5.72	.84
4	0600	-033.91	580	1.3	0.16	-2.0934	.22	5.7	204	quiet	5.84	1.13
	1000		588	1.1	.24		.195				5.79	1.1
6	1100	-034.5	467	2.5	-----	-2.022	.125	6.3	085	sl. dist.(1)	5.82	1.16
9	1200	-035.32	304	5.1	-----	-1.7859	.14	5.6	112	quiet	6.1	1.2
11	0600	-035.83	371	4.5	-----	-2.0153	.14	10.3	338	very quiet	5.75	1.11
	1000		344	2.7	-----		.125				5.94	1.01
16	1300	-036.99	362	2.5	-----	-2.1387	.14	5.8	311	very quiet	14.8	1.16
18	0500	-037.41	359	13.8	-----	-2.2151	.133	11.8	309	very dist.(2)	6.23	1.17
	0900		433	4.1	-----		.151				5.85	1.06
20	1200	-037.8	581	3.9	-----	-2.4841	.14	11.6	196	disturbed (3)	5.63	1.09
24	1030	-038.5	333	3.6	-----	-2.3268	.13	5.3	098	quiet	6.05	1.19
	1430		344	4.5	-----		.13				6.11	1.01
25	0600	-038.7	346	6.0	-----	-2.3706	.214	5.5	109	disturbed (4)	6.07	1.17
	1000		363	6.5	.061		.14				6.14	1.09
27	1300	-039.0	425	2.5	-----	-2.4955	.117	8.2	334	very quiet	6.11	1.04

[1] Wolfe - NASA/ARC
[2] Scarfe - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N.H.

ESP = Earth-Sun Probe Angle.

Notes: (1) With one Field Direction Reversal at 1305 UT
(2) With four Field Direction Reversals at 0505, 0829, 0859 and 0930 UT
(3) With three Field Direction Reversals at 1200, 1400 and 1430 UT
(4) With one Field Direction Reversal at 0900 UT

Pioneers 9/11 Spiral Alignment Period at Nominal Solar Wind Velocities of 300 to 500 km/sec: June 16 thru Dec. 15, 1973.

INFERRED IP MAGNETIC FIELD

ROTATION NO.		DAY IN SOLAR ROTATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	D 20	T	A	A	A	A	A	A	A	T	T	T	T	-	T	T	T	T	T	T	T	T	T	T	-	T	T	T
1972	J 26	T	A	A	A	A	T	T*	T	T	T	T	T	T	T	T	T	T	A	A	A	T	T	T	T	T	TA	A
1895	F 12	A	T	A	A	A	A	T	T	T	TA	A	-	A	T	T	T	T	TA	A	T	T	T	T	T	TA	A	A
	M 10	A	A	A	A	A	A	A	A	A	A	A	T	A	T	T	T	T	A	A	T	T	T	T	T	A	A	
	A 6	A	T	T	A	T	T	T	T	T	T	T	T	T	A	T	T	A	A	A	A	A	-	A	A	T	TA	A
	M 3	A	A	A	-	A	T	T	T	T	T	T	T	T	A	A	T	A	A	A	A	A	T	A	T	T	A	T
	M 30	A	A	*	A	A*	T	T	A	T	T	T	A	-	-	-	-	-	T	-	A	A	T	T	T	T	TA	A
1900	J 26	A	A	A	A	A	A	A	AT	T	T	T	TA	A	T	T	A	A	A*	A*	A	T*	T	T	T	T	T	TA
	J 23	A*	A*	A*	A	A	A	A	A*	T	T	A	A	A	-	A	T	T	T	T	T	A	T	T	T	T	A	-
	A 19	-	-	A	A	A	A	A	T	A	A	A	A	T	A	A	A	T	I	T	T	A	A	T	A	A	A	-
	S 15	A	T*	A	A	A	A	A	T	A	A	A	-	-	-	-	-	T	T	T	T	T	-	T	A	A	A	T
	O 12	T	-	-	A*	T	T	T	A	A	T	A	A	A	A	A	A	AT	T	AT	T*	T	-	A*	AT	T	T	*	A
1905	N 8	A	A	A	AT	AT	AT	T	T*	A	A	A*	AT	A	A	AT	T	T	TA	T	T	T	A	A	A	A	AT	T
	D 5	T	T	AT	-	-	T	T	AT	-	T	T	A	-	-	T	TA	A	T	T	T	A*	T	T	T	T	AT	T
1973	J 1	T	T	T	T	T	T	T	-	AT	T	-	-	TA	A	A	A	A	A	T	-	-	T	-	T	-	T	T
	J 28	T	A	T	T	T	T	T	T	A	TA	A	A	AT	TA	AT	TA	AT	-	A	A	T	T	T	T	T	T	T
	F 24	T	T	TA	T	T	-	TA	A	A	T	A	A	A	AT	A	A	A	TA	A	A	TA	A	A	T	T	T	T
1910	M 23	T	T	T	A	T	T	T	TA	A	TA	A	A	-	A	A	TA	A	A	AT	T-	-	T	T	T	T	T*	T*
	A 19	T	AT	T-	T	T	T	A	T	T	TA	A	A	A*	A	AT	TA	A*	T	A	TA	T*	AT	A	T	A	T	A*
	M 16	T	T	T	T	T	T	TA	T	A	AT	T	A	A	A	A	A	A*	A	A	A	A	T*	-A	A	-	T	T
	J 12	T*	T	-	T	T*	A	T	T*	T*	T	T	AT	A	A	T	-	T	A	A	A	A*	AT	-	T	A	A	T
	J 9	T	T	A	T	T	A	T*	T*	A	AT	-	A	T	TA	T	T	T	A	A*	A	A*	TA					

Inferred IP Magnetic Field

The table shows daily inferences of the polarity of the interplanetary magnetic field made from magnetograms produced by a tri-axis magnetometer located at the Thule Geopole Station of the Air Weather Service. The inference relies on the discoveries of Mansurov (Geomagn. Aeron., 9, 622-623, 1969) and Svalgaard (Geophys. Pap. R-6, 11 pp., Dan. Meterol. Inst., Copenhagen, 1968) relating the variation of the polar cap magnetic field to the polarity of the interplanetary field. It was originally believed that the radial component (BXM in Geocentric Solar Magnetospheric coordinate system) of the IP field determined the effect observed in the polar cap field, but recent evidence (Friis-Christensen, et al., J. Geophys. Res., 77, 371, 1972) indicate the responsible component may be BYM, the component in the ecliptic plane perpendicular to BXM. As long as the IP field remains in a normal Archimedes spiral, the variation in sign of BYM maps one-to-one with the variation of sign of BXM.

The notation adapted for the table is that BXM>0 (BYM<0) is represented by the symbol A (away from the sun) and BXM<0 (BYM>0) is represented by the symbol T (toward the sun). A day with two polarities indicates that an inferred change of sign occurred during the interval approximately 1200 UT to 2000 UT, when the effect is observable at Thule. An asterisk along with an A or T indicates days when the effect was somewhat doubtful, but one polarity seemed predominant. An asterisk alone indicates days when no clear polarity effect could be discerned. A dash indicates days when missing data prevented inference of the polarity.

JUNE 1973 DATA

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See notes on pages 24, 25, 41 and 53.

For explanations of the data contained herein see "Descriptive Text" published as supplement to February 1973 "Solar-Geophysical Data" (Number 342).

Jun 73 H-alpha Synoptic Charts

These charts of the entire solar surface show solar activity in terms of:

polarity of magnetic fields
filaments (cross-hatched)
major sunspots (large dots)
H-alpha plage (stipple)
distinct neutral lines (solid lines)
estimated neutral lines (dashed lines)

Heliographic latitude is plotted vertically and solar longitude horizontally. Longitude is in terms of the mean rotation rate for sunspots (Carrington longitude). The dates when these longitudes pass the sun's central meridian appear at the top of the charts.

The charts are labeled with the serial number of the solar rotation as counted by Carrington, with the first rotation commenced 1853 November 9.

The positions of magnetic polarity reversal are inferred according to the techniques described by McIntosh (Rev. Geophys. and Space Phys., Vol. 11, pp 837-846 [1972]; Solar Activity Observations and Predictions, McIntosh and Dryer, eds., MIT Press, 1972). The H-alpha structures that reveal these "neutral" lines are: filaments, filament channels, plage corridors, "iron-filing" patterns of fibrils adjacent to active centers, and arch-filament systems. The patterns are mapped by accumulating the positions of features on H-alpha filtergrams from several consecutive days. Seldom does a single photograph show the patterns in their complete form, owing to the transient nature of the filaments and the variable observing conditions.

Magnetic polarities are inferred from Hale's law: leader sunspots in opposite solar hemispheres have opposite polarities. Northern leaders possess negative polarity during even-numbered solar cycles, while southern leaders are positive. The current solar cycle is #20. The polarity rules will reverse with the first active centers of Cycle #21. The polarities of all areas on the sun are inferred by beginning with a leader sunspot, or the leading portion of a bipolar plage, and alternating polarities with each successive neutral line.

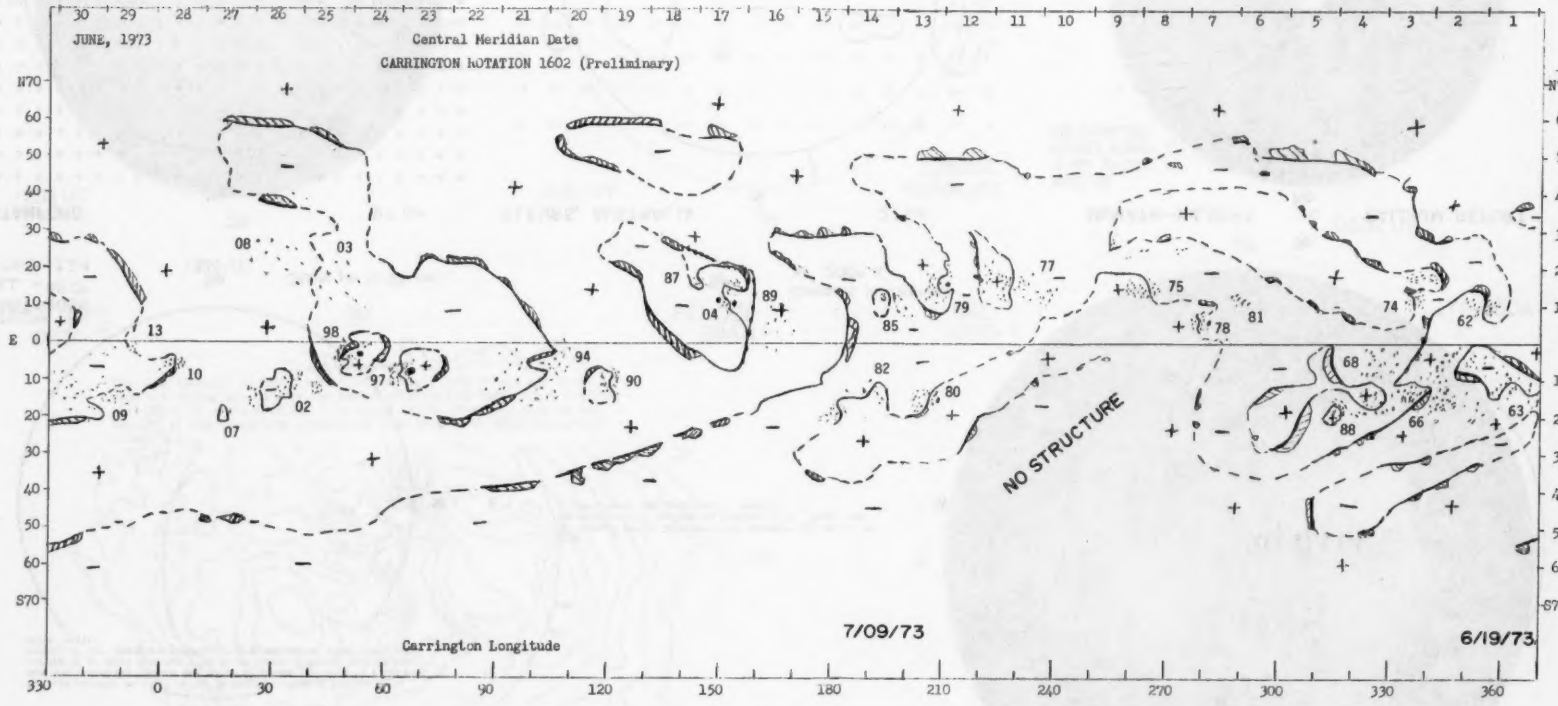
The H-alpha patterns mapped are the forms seen when the particular features were near W40 on the visible solar hemisphere. This bias toward the west enables a more realistic comparison with solar wind, particle, and magnetic-field data measured near the earth. Whenever a pattern undergoes a conspicuous change from the time of first visibility to the time when at W40, the former neutral-line position is depicted as a line with dots superimposed.

The charts published here are preliminary versions constructed as part of the real-time solar monitoring at NOAA's Space Environment Services Center in Boulder. In most cases, there has been corroboration with solar magnetograms made with photospheric spectral lines (Kitt Peak, Mt. Wilson and Sacramento Peak). Some changes and additions will be necessary when more careful study of the filtergrams and magnetic-field data can be made. The date in the lower right corner is the date of last revision.

The mapping techniques include comparison with previous synoptic charts for maintenance of consistency and continuity. Constant use of the inferred magnetic-field data since 1967 has demonstrated their 90% accuracy when compared with magnetograph data.

Hα SYNOPTIC CHARTS

JUNE 1973



23 Jun 73

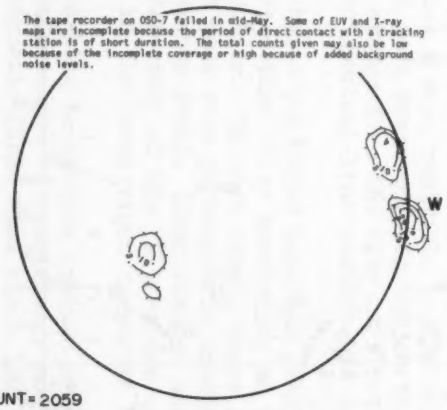
JUNE 1, 1973 (P = -15.51, B_o = -0.63, L_o = 9.61)

24 Jun 73

NASA GSFC OSO-7 — X-RAY 8-16A

Np

The tape recorder on OSO-7 failed in mid-May. Some of EUV and X-ray maps are incomplete because the period of direct contact with a tracking station is of short duration. The total counts given may also be low because of the incomplete coverage or high because of added background noise levels.



E W

COUNT = 2059
ROLL = 45.0°
P-TH = -7.24

Sp
1333 UT

Counts per 0.125 sec.

PROSPECT HILL AFCRL — 8.6 mm

Np

Note:
For several months beginning with December 1972 no 8.6 mm observations will be made at Prospect Hill. Repair and calibration of equipment are in progress.

E W

Sp

Contours in Intervals of 200° K

MT. WILSON — MAGNETOGRAM

Np

Solid-Plus
Dotted-Minus

NO DATA

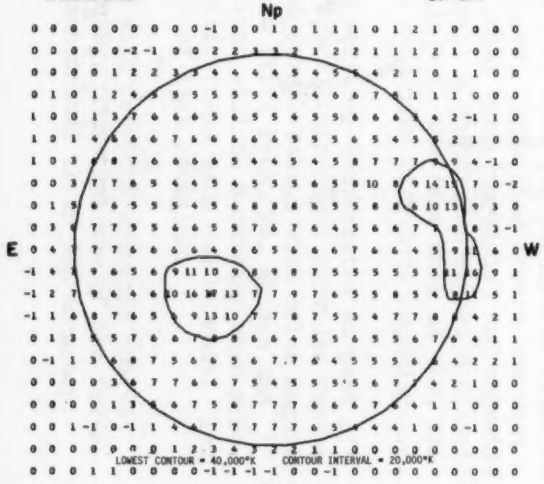
E W

Levels
±5
±10
±20
±40
±80

Sp

STANFORD — 9.1 cm

Np



E W

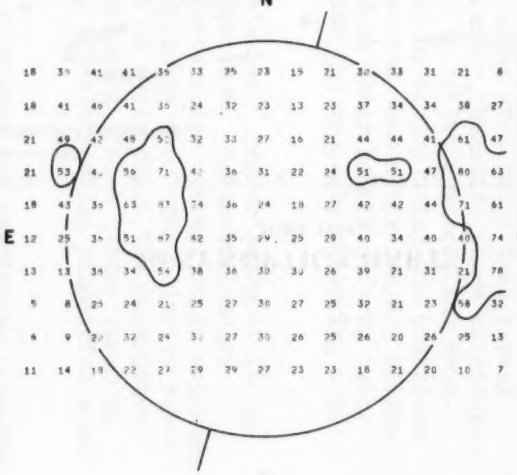
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Sp
20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA — 21 cm

N



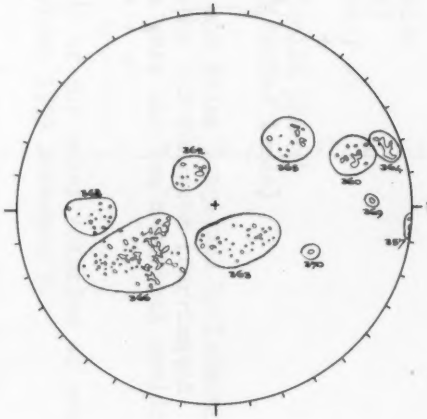
E W

S
02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT — CALCIUM REPORT

Np



E W

FAIR M
64-1700-3.5

Sp
1400 UT

Sp

20-21 UT Brightness Unit 5,000° K

S

02-03 UT Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

Sp

1400 UT

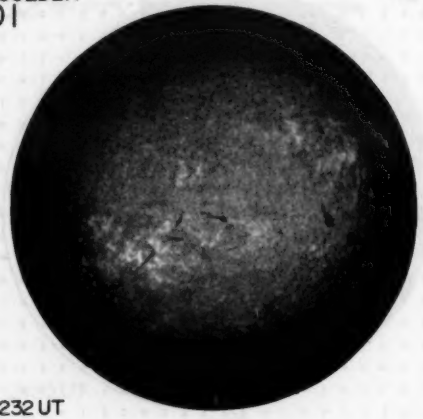
BOULDER
01

Np

Hα

E

W



1232 UT

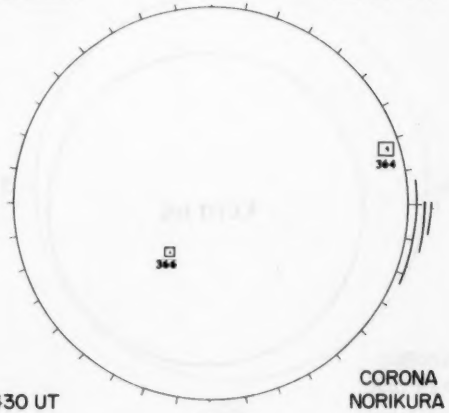
Sp

BOULDER

Np

SUNSPOTS

E



1430 UT

CORONA
NORIKURA

Sp

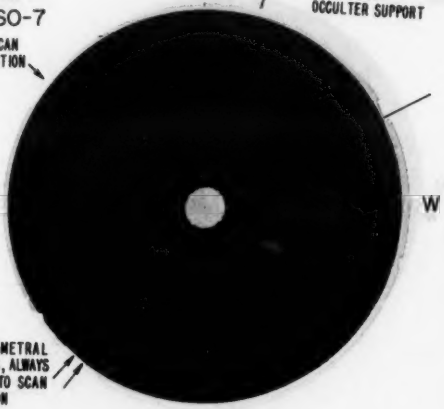
NRL
OSO-7

Np

SHADOW AREA
CAUSED BY
OCCULTER SUPPORT

TV SCAN
DIRECTION

E



W

TWO DIAMETRAL
STREAKS, ALWAYS
AT 90° TO SCAN
DIRECTION

Sp

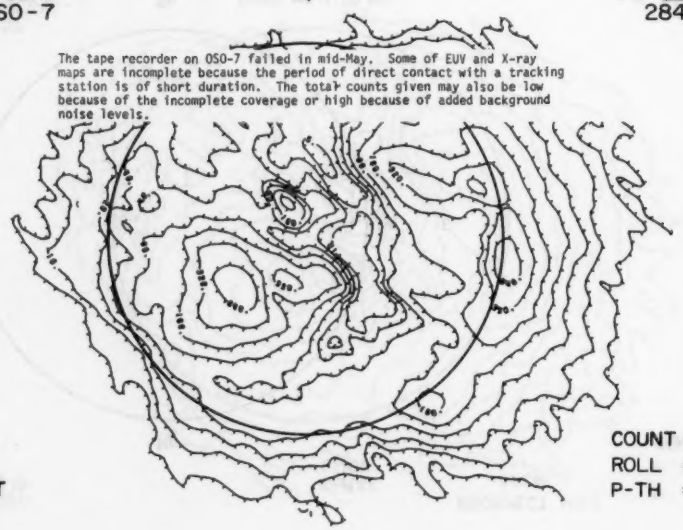
0532 UT

NASA GSFC
OSO-7

Np

The tape recorder on OSO-7 failed in mid-May. Some of EUV and X-ray maps are incomplete because the period of direct contact with a tracking station is of short duration. The total counts given may also be low because of the incomplete coverage or high because of added background noise levels.

E



W

1153 UT

COUNT = 102550
ROLL = 44.8°
P-TH = -7.23

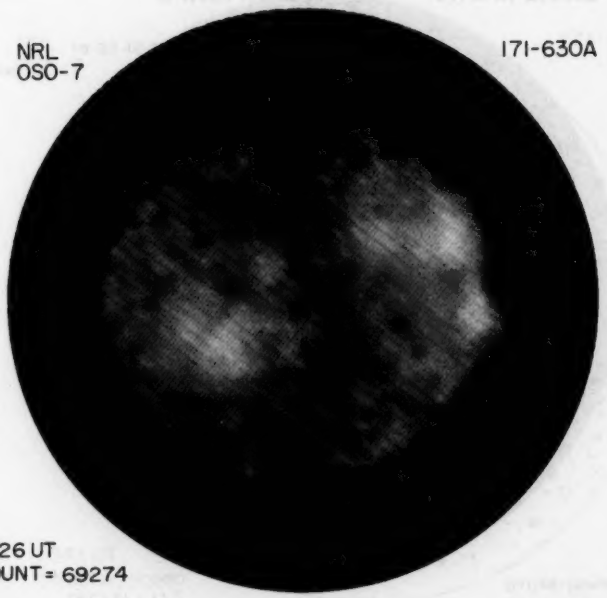
FE XV
284A

NRL
OSO-7

Np

171-630A

E



W

1326 UT
COUNT = 69274

Sp

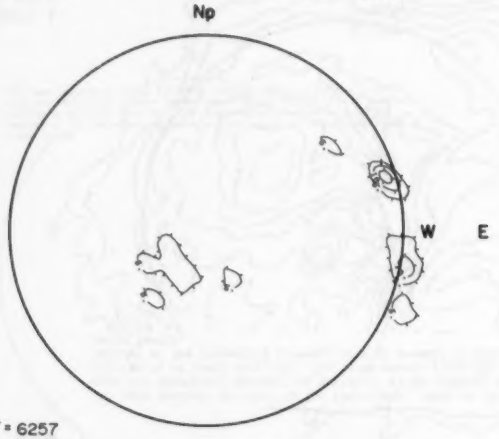
25
Jun 73

JUNE 2, 1973 (P = -15.14, B_o = -0.51, L_o = 356.38)

26 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



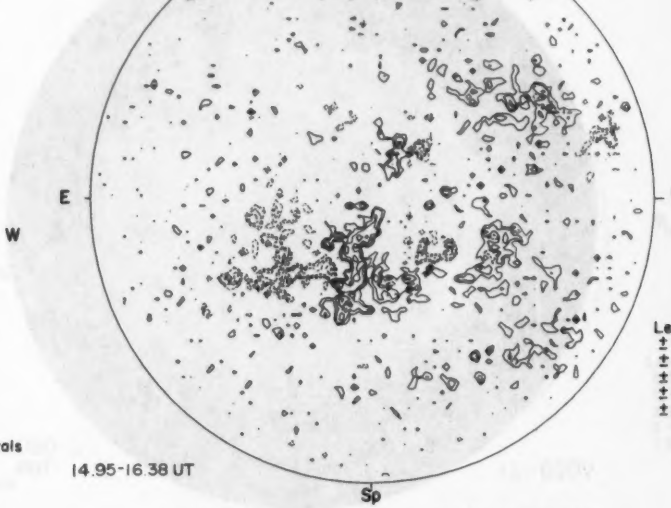
COUNT = 6257
ROLL = 47.2°
P-TH = -7.24

1047 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.2
DELTAX = 14.0

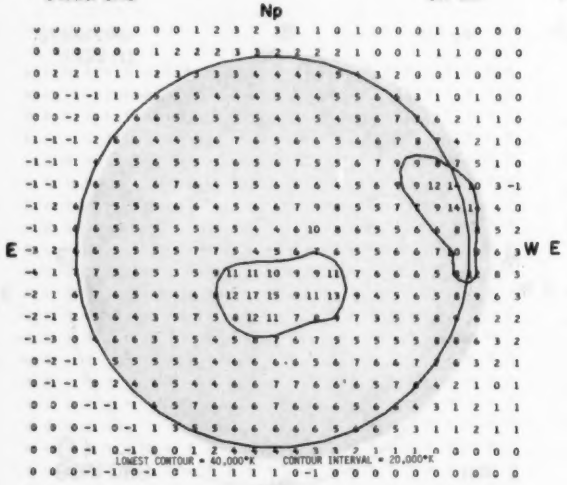
MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
±5
±10
±20
±40
±80

14.95-16.38 UT

STANFORD

9.1 cm



Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

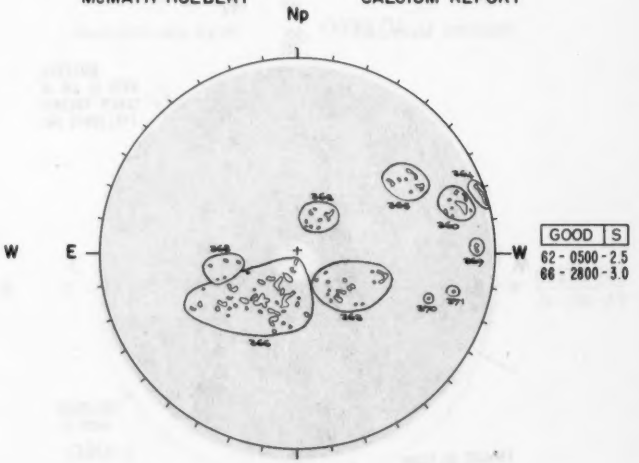
21 cm

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



1215 UT

BOULDER
02

Np

Hα

E

W

Sp

2150 UT

BOULDER

Np

SUNSPOTS

E

W

CORONA
SAC PEAK

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

0552 UT

Sp

NASA GSFC
OSO-7

Np

E

W

1224 UT

COUNT = 82592
ROLL = 47.4°
P-TH = -7.24

FE XV
284A

NRL
OSO-7

Np

171-630A

E

W

1043 UT
COUNT = 75215

Sp

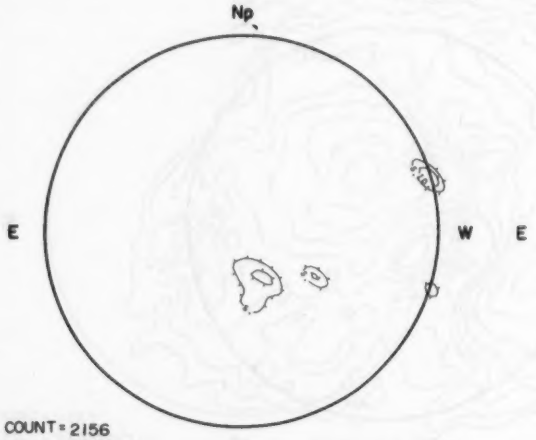
27
Jun 73

JUNE 3, 1973 (P = -14.76, B_o = -0.39, L_o = 343.15)

28 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 2156
ROLL = 50.9°
P-TH = -7.25

1123 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

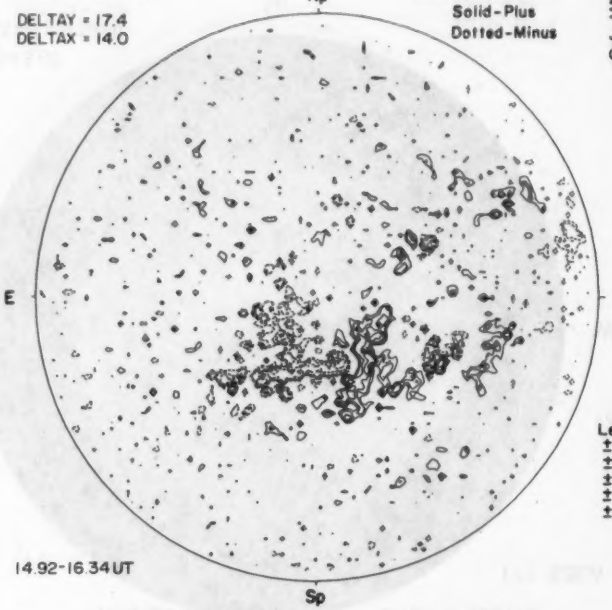
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

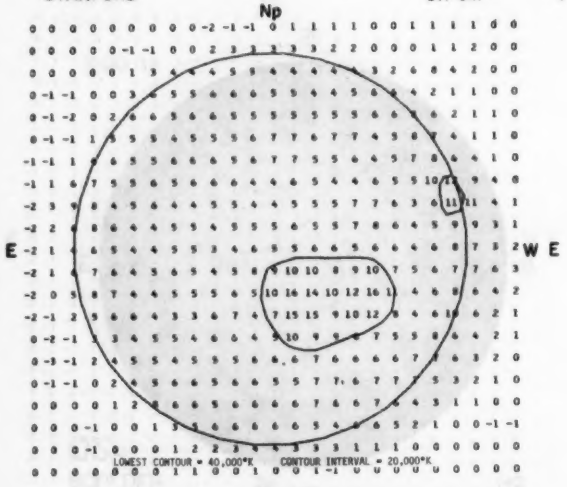


Levels
±5
±10
±20
±40
±80

14.92-16.34 UT

STANFORD

9.1 cm



Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

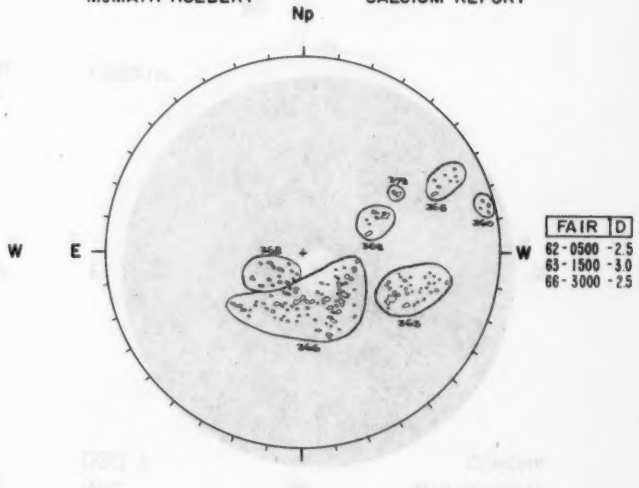
21 cm

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



1930 UT

20-21 UT

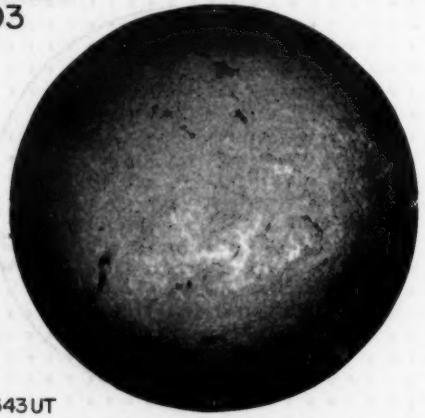
02-03 UT Brightness Unit 1,700° K

1930 UT

BOULDER
03

Np

Hα



E

W

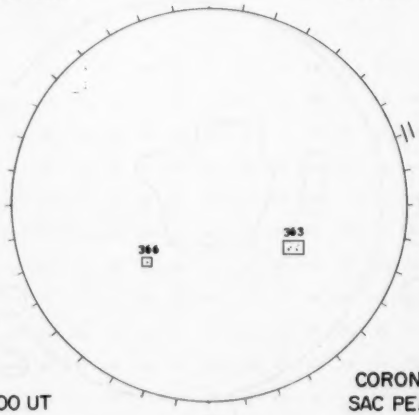
1343 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1600 UT

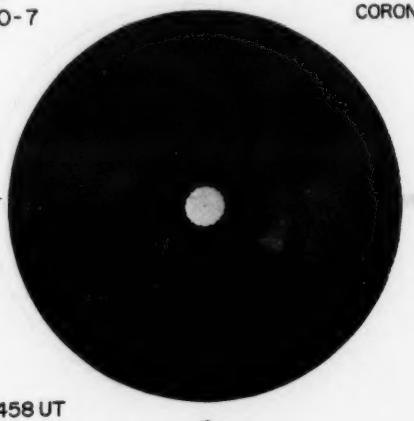
CORONA
SAC PEAK

Sp

NRL
OSO-7

Np

WHITE - LIGHT
CORONA



E

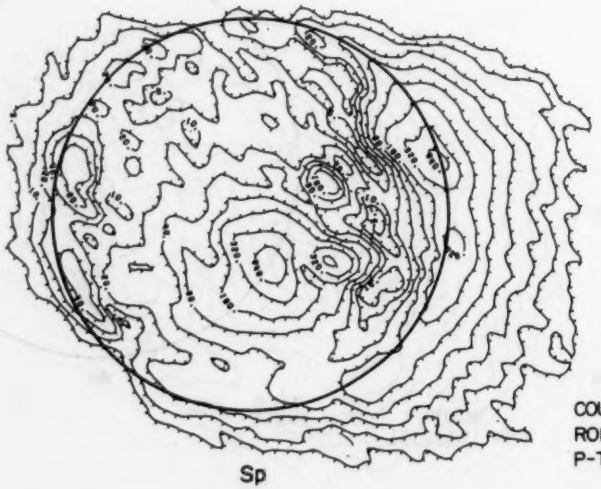
W

0458 UT

Sp

NASA GSFC
OSO-7

Np



E

W

1256 UT

Sp

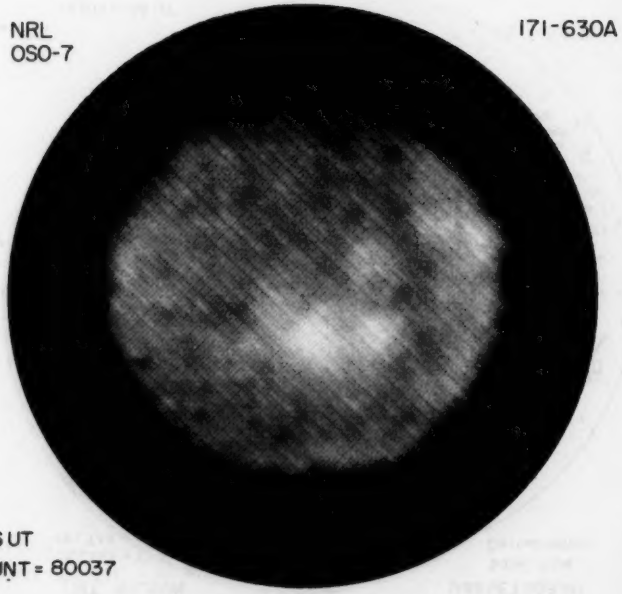
FE XV
284 A

COUNT = 72690
ROLL = 51.1°
P-TH = -7.25

Np

NRL
OSO-7

171-630A



E

W

1116 UT
COUNT = 80037

Sp

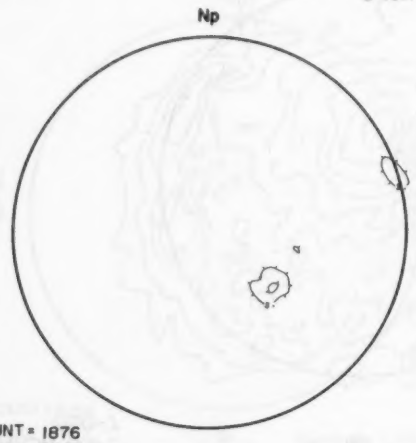
29
Jun 73

JUNE 4, 1973 (P=-14.37, B_o=-0.27, L_o=329.91)

30 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 1876
ROLL = 54.5°
P-TH = -7.26

1154 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

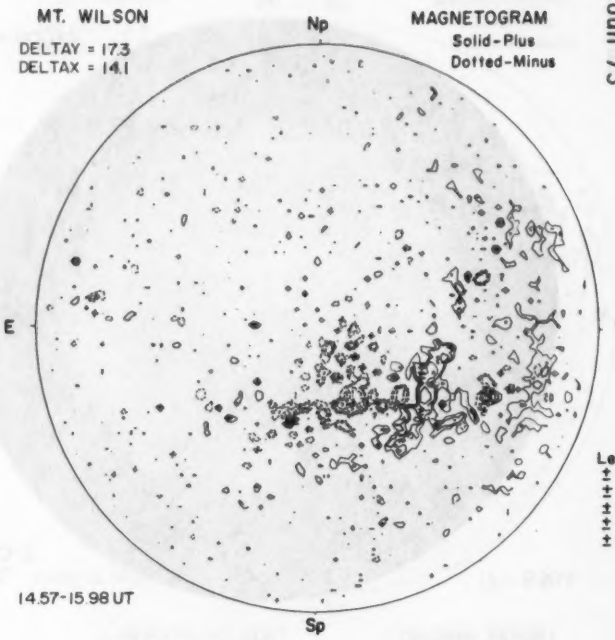
8.6 mm

Contours in intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

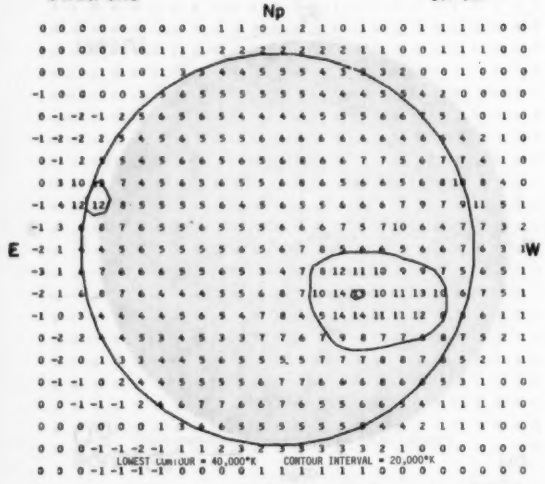


Levels
±5
±10
±20
±40
±80

14.57-15.98 UT

STANFORD

9.1 cm



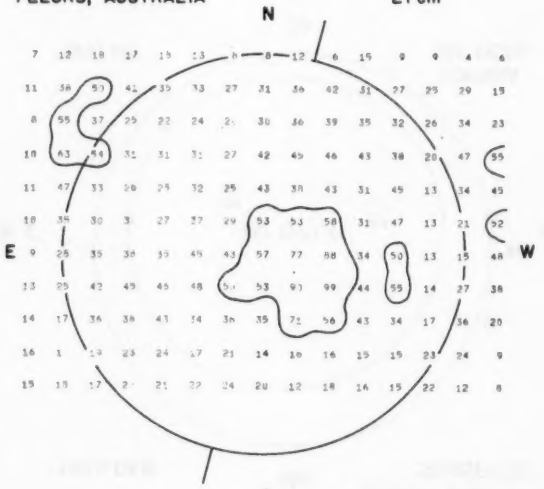
LOWEST LUMINOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

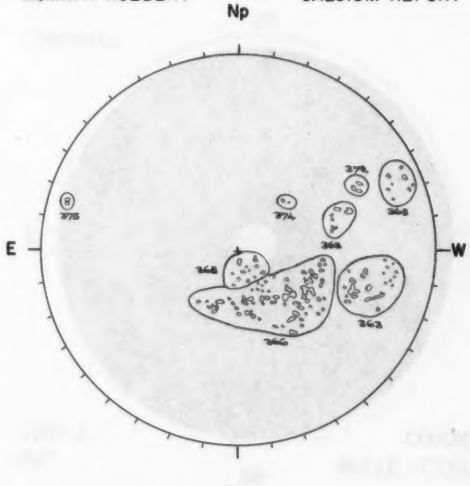


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR D
63 - 1500 - 25
66 - 3000 - 25

1130 UT

20-21 UT
Brightness Unit 5,000° K

02-03 UT
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

1130 UT

BOULDER
04

Np

Hα

NO DATA

E

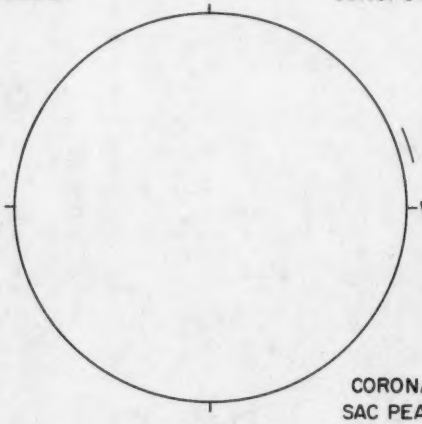
W

Sp

BOULDER

Np

SUNSPOTS



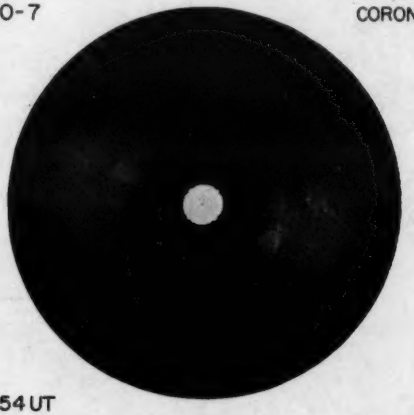
Sp

CORONA
SAC PEAK

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



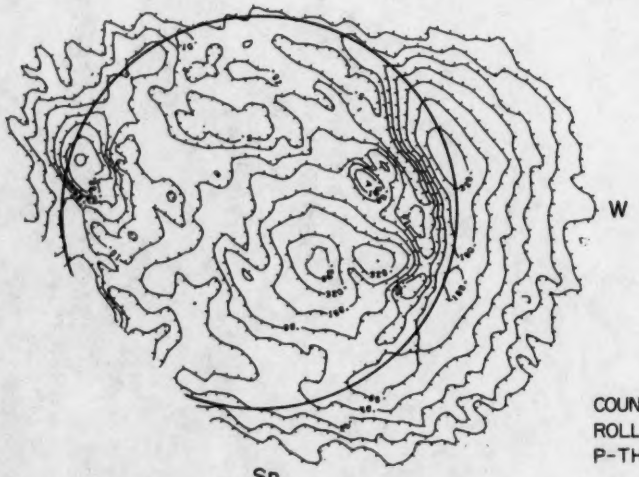
0654 UT

Sp

NASA GSFC
OSO-7

Np

FE XV
284A



1009 UT

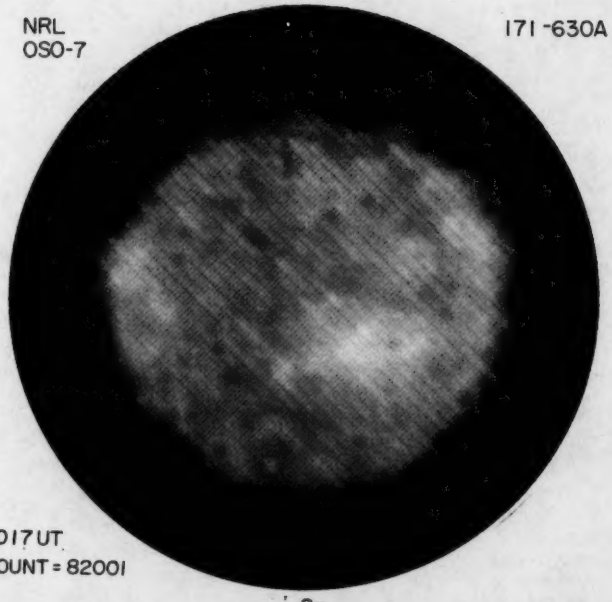
Sp

COUNT = 61984
ROLL = 54.3°
P-TH = -7.26

Np

NRL
OSO-7

171-630A



1017 UT
COUNT = 82001

Sp

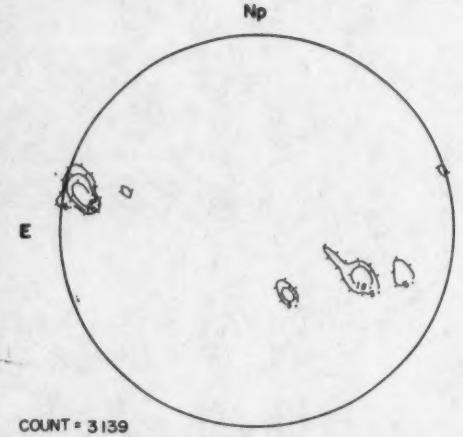
31
Jun 73

JUNE 5, 1973 (P = -13.98, B_o = -0.15, L_o = 316.68)

32 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3139
ROLL = 56.7°
P-TH = -7.26

1222 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

Contours in Intervals of 200° K

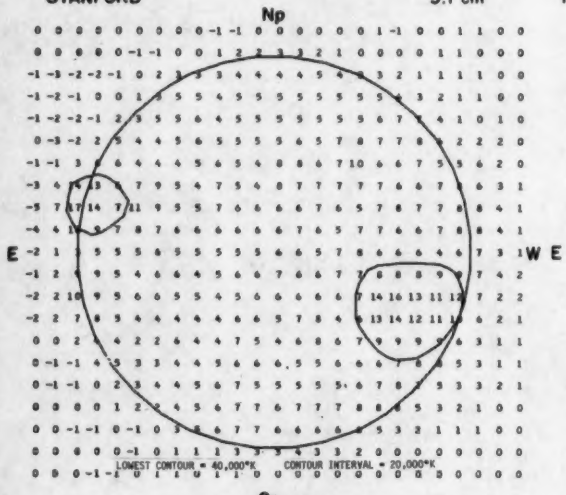
MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm

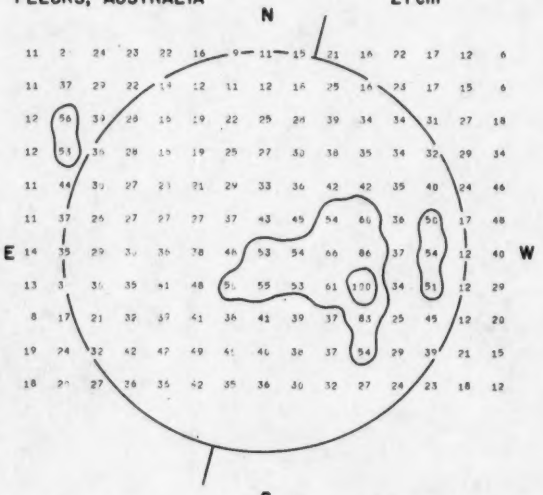


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

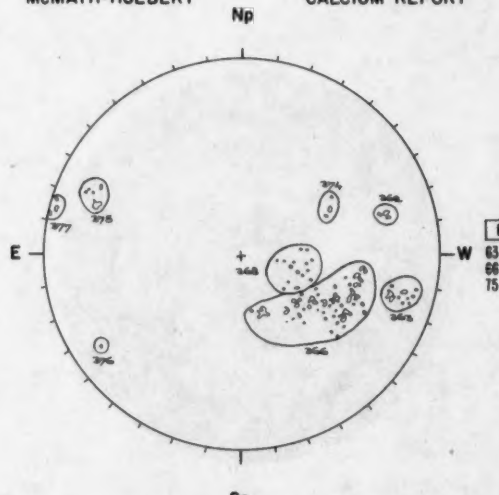


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



1350 UT

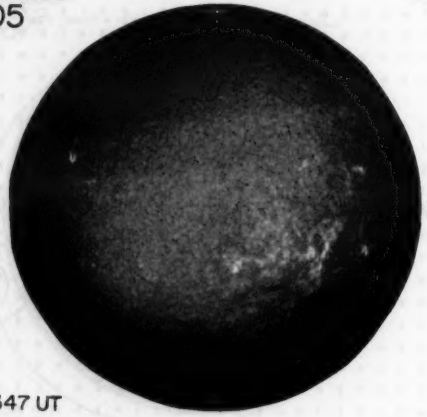
02-03 UT Brightness Unit 1,700° K

1350 UT

BOULDER
05

Np

Hα



E

W

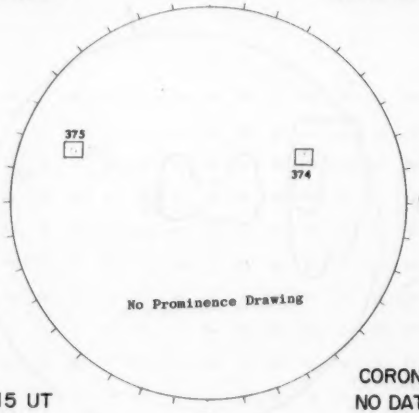
1347 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1715 UT

Sp

CORONA
NO DATA

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

0726 UT

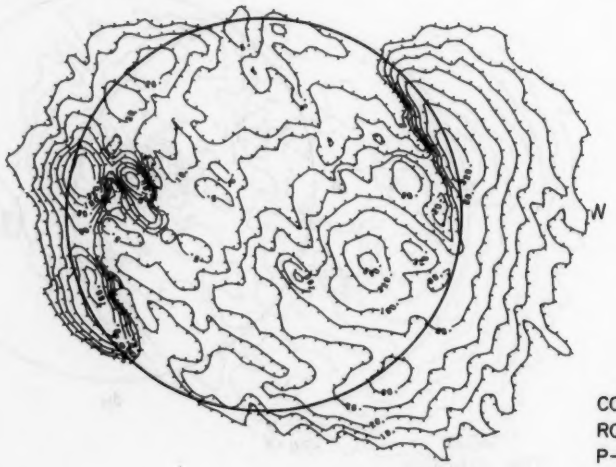
Sp

Np

NASA GSFC
OSO-7

Np

FE XV
284A



E

W

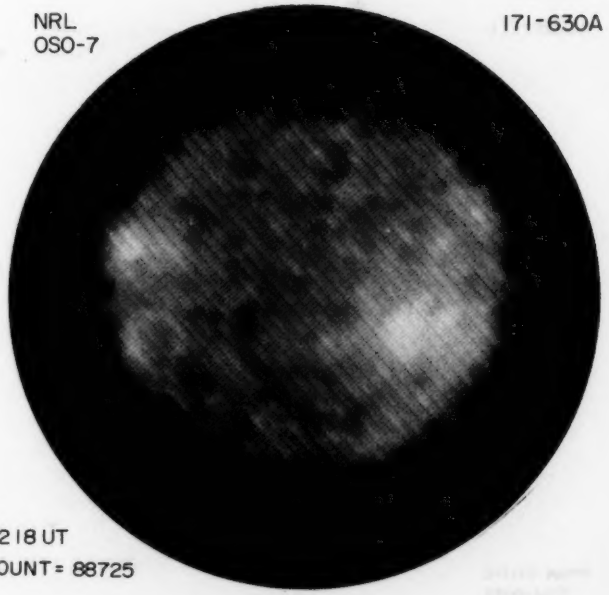
1222 UT

Sp

COUNT = 53403
ROLL = 56.7°
P-TH = -7.26

NRL
OSO-7

171-630A



E

W

1218 UT
COUNT = 88725

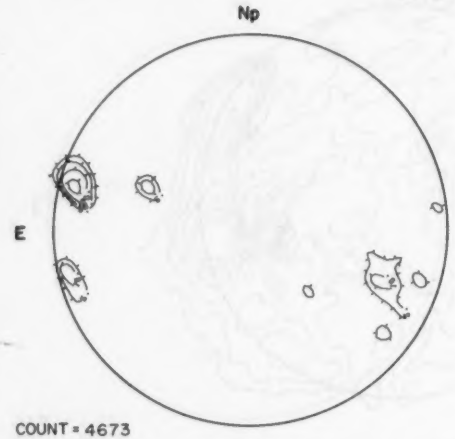
Sp

33
Jun 73

JUNE 6, 1973 (P = -13.59, B_o = -0.03, L_o = 303.44)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4673
ROLL = 57.6°
P-TH = -7.26

0940 UT

Counts per 0.125 sec.

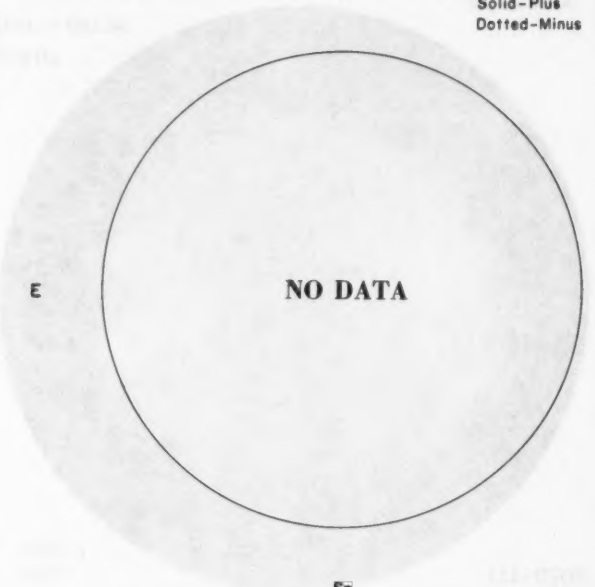
PROSPECT HILL
AFCRL

8.6 mm

Contours in Intervals of 200° K

MT. WILSON

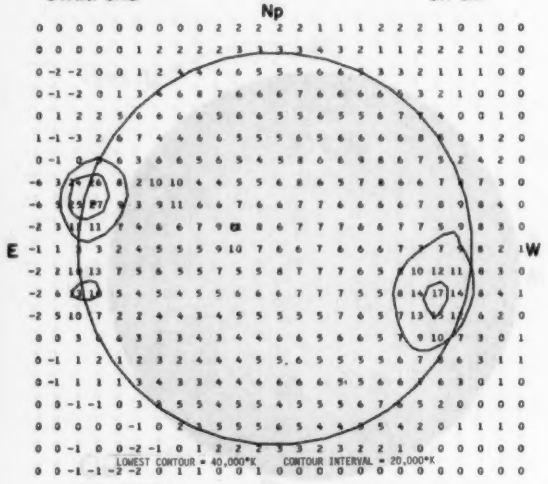
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm

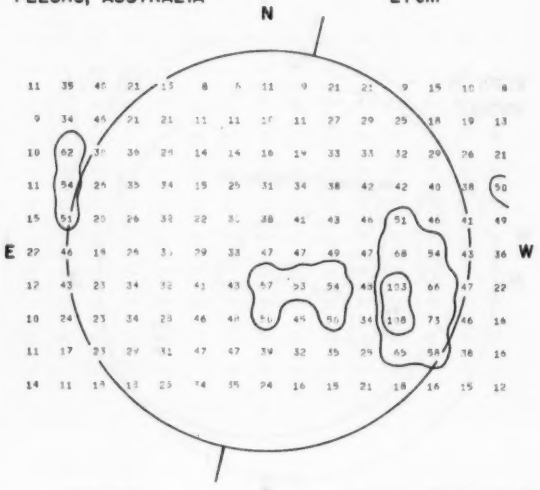


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

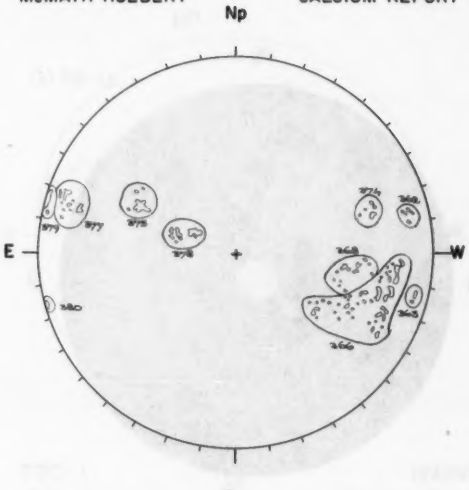


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR	M
66 - 2500 - 2.5	
75 - 0800 - 3.0	
78 - 0800 - 3.0	
79 - 0900 - 3.0	

2245 UT

20-21 UT

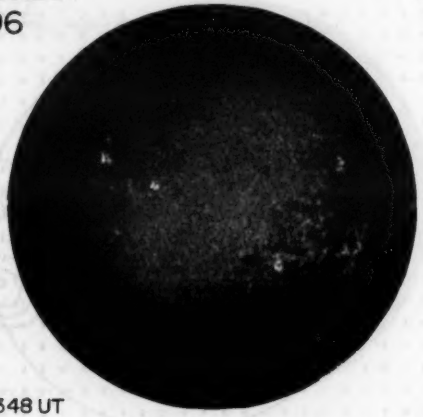
02-03 UT
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

2245 UT

BOULDER
06

Np

Hα



E

W

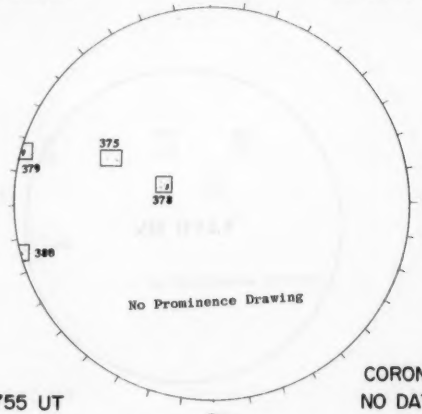
1348 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1755 UT

Sp

CORONA
NO DATA

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

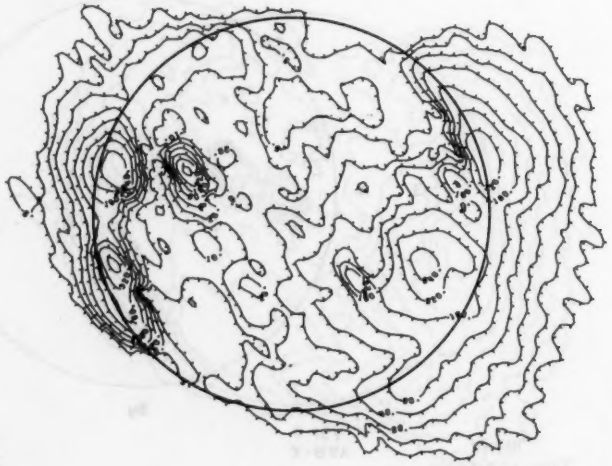
W

0758 UT

Sp

NASA GSFC
OSO-7

Np



E

W

0940 UT

Sp

FE XV
284A

COUNT = 67643
ROLL = 57.6°
P-TH = -7.26

Np

NRL
OSO-7

171-630A

E

W

1112 UT
COUNT = 94685

Sp

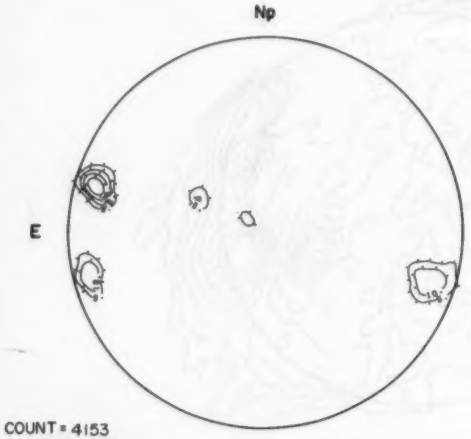
35
Jun 73

JUNE 7, 1973 (P=-13.19, B_o= 0.09, L_o=290.21)

36
Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4153
ROLL = 56.0°
P-TH = -7.26

1011 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

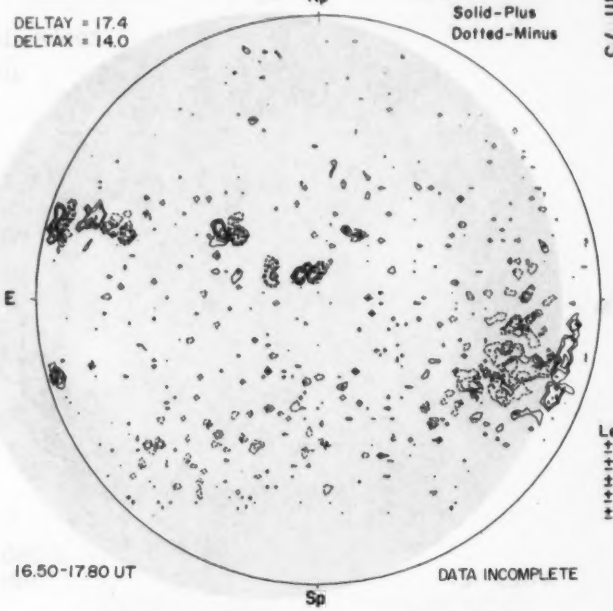
8.6 mm

Contours in intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus



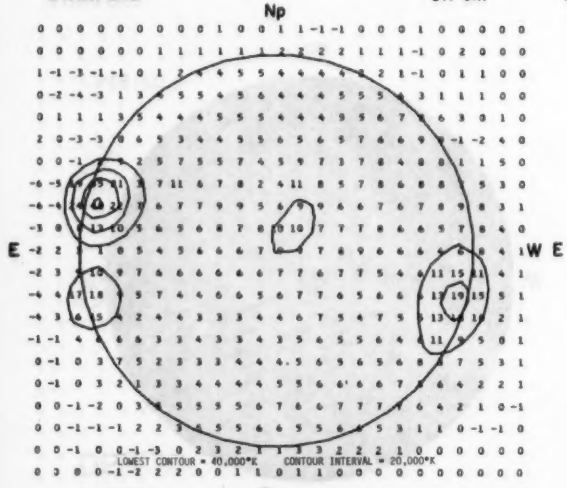
Levels
±5
±10
±20
±40
±80

16.50-17.80 UT

DATA INCOMPLETE

STANFORD

9.1 cm



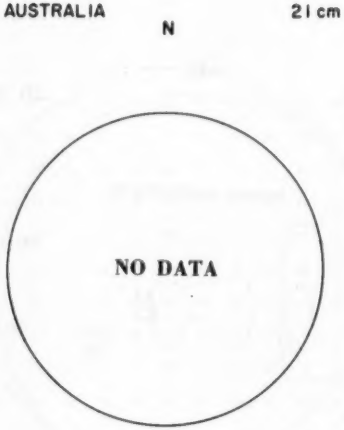
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

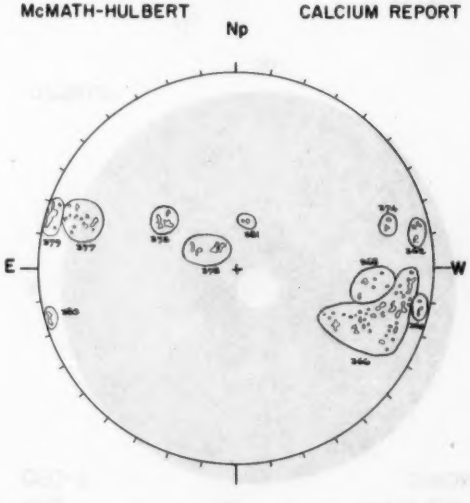


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR	S
66 - 2200	-2.5
75 - 0600	-3.0
78 - 0700	-3.5
79 - 1500	-3.5

1130 UT

20-21 UT

02-03 UT

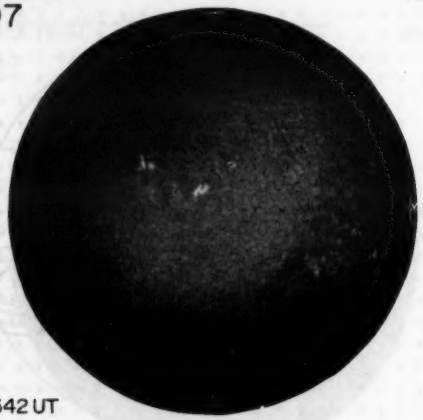
Brightness Unit 1,700° K

1130 UT

BOULDER
07

Np

Hα



E

W

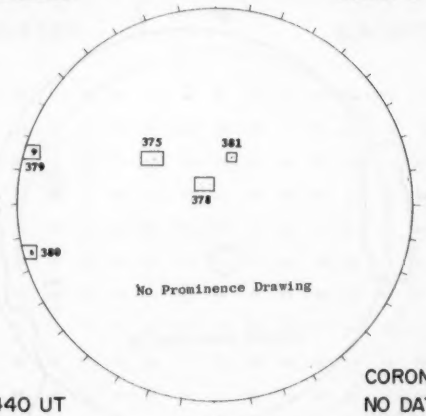
1342 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1440 UT

Sp

CORONA
NO DATA

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

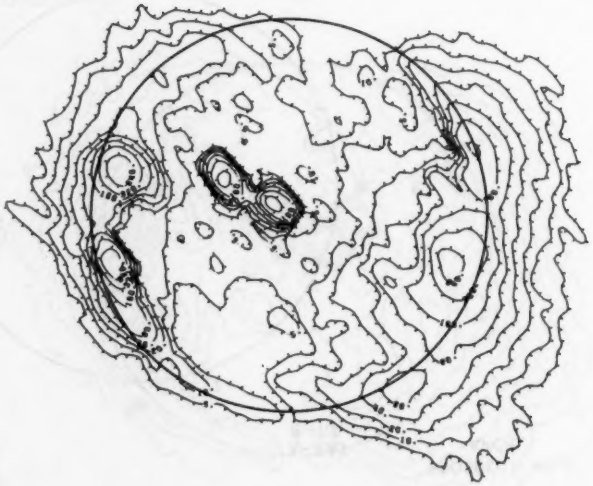
W

0517 UT

Sp

NASA GSFC
OSO-7

Np



E

W

1011 UT

FE XV
284 A

COUNT = 57462
ROLL = 56.0°
P-TH = -7.26

Np

NRL
OSO-7

171-630A

E

W

1016 UT
COUNT = 89860

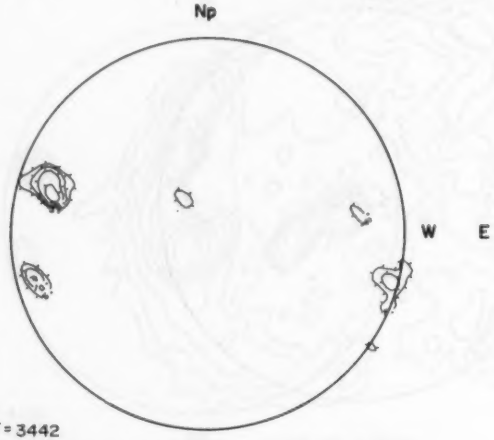
Sp

37
Jun 73

JUNE 8, 1973 (P = -12.79, B_o = 0.21, L_o = 276.97)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3442
ROLL = 54.1°
P-TH = -7.26

1042 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

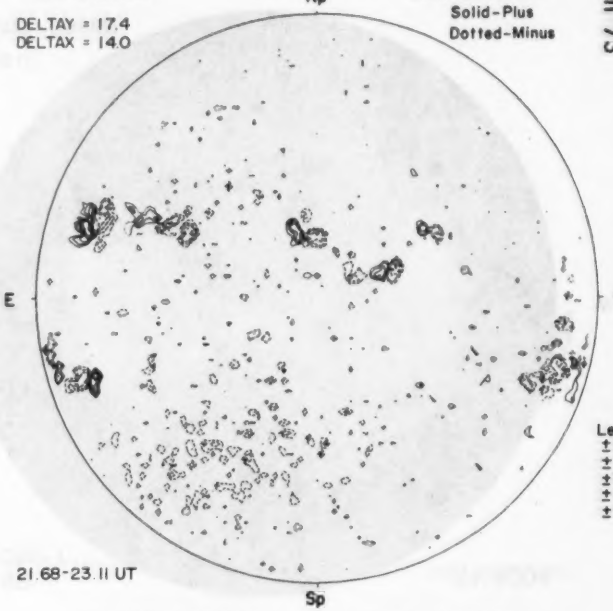
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

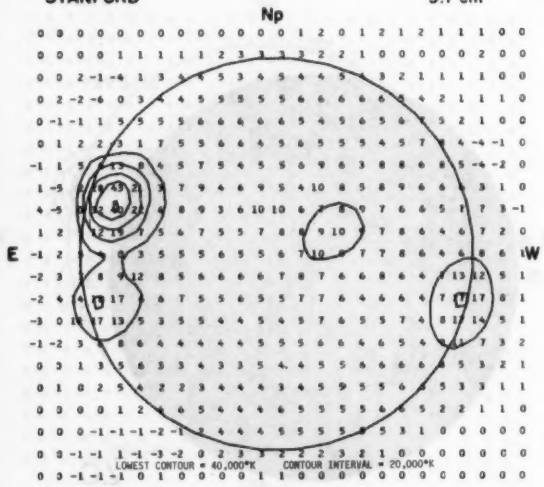


Levels
±5
±10
±20
±40
±80

21.68-23.11 UT

STANFORD

9.1 cm

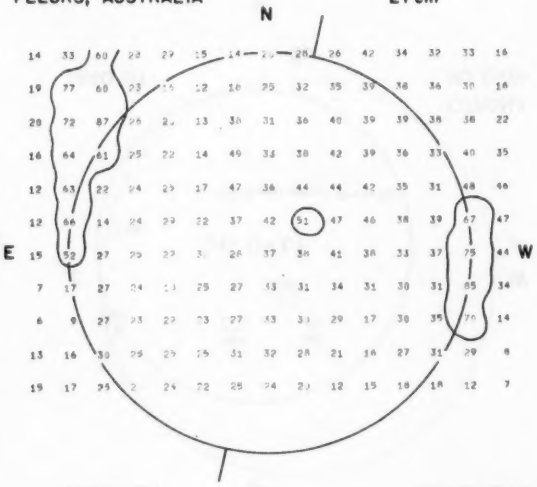


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

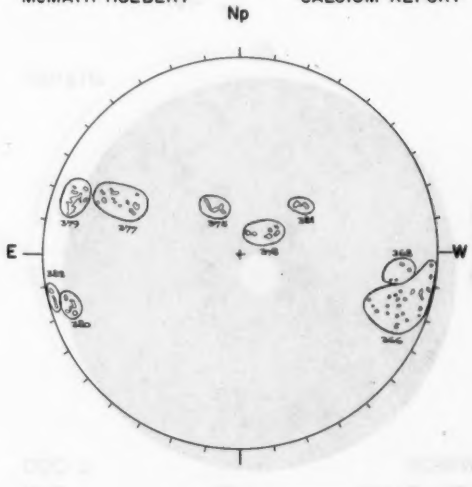


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR | S
75 - 0400 - 2.5
78 - 0600 - 2.5
79 - 1300 - 4.0
81 - 0200 - 3.0

1200 UT

Sp

20-21 UT

Brightness Unit 5,000° K

S

02-03 UT

Resolution 3 Minutes of Arc

Brightness Unit 1,700° K

Sp

1200 UT

BOULDER

08

Np

Hα

E

W

1430 UT

Sp

BOULDER

Np

SUNSPOTS

379

380

383

E

W

No Prominence Drawing

CORONA

NORIKURA

1515 UT

Sp

NRL

OSO-7

Np

WHITE-LIGHT

CORONA

E

W

0901 UT

Sp

NASA GSFC

OSO-7

Np

E

1042 UT

Sp

FE XV

284A

COUNT = 61614

ROLL = 54.1°

P-TH = -7.26

NRL

OSO-7

Np

171-630A

W

E

W

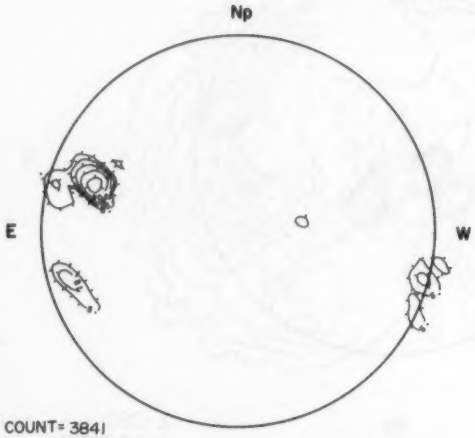
1046 UT

COUNT= 95159

JUNE 9, 1973 (P = -12.38, B_o = 0.33, L_o = 263.74)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3841
ROLL = 53.0°
P-TH = -7.25

08/2321 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

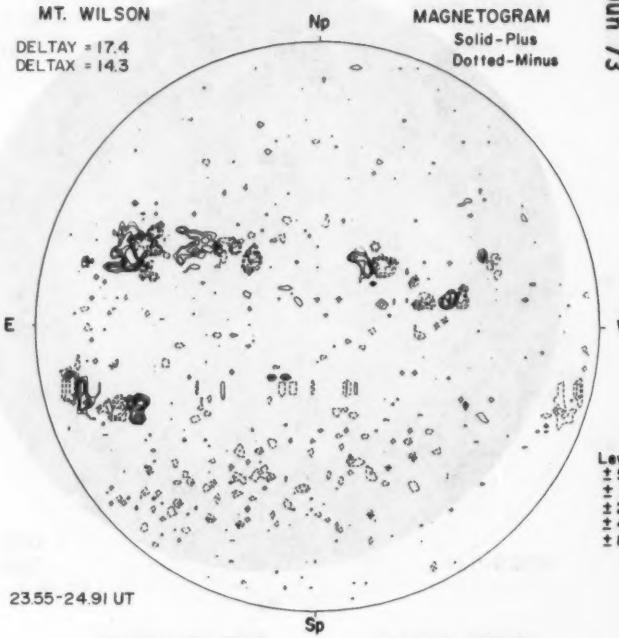
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.3

MAGNETOGRAM
Solid-Plus
Dotted-Minus

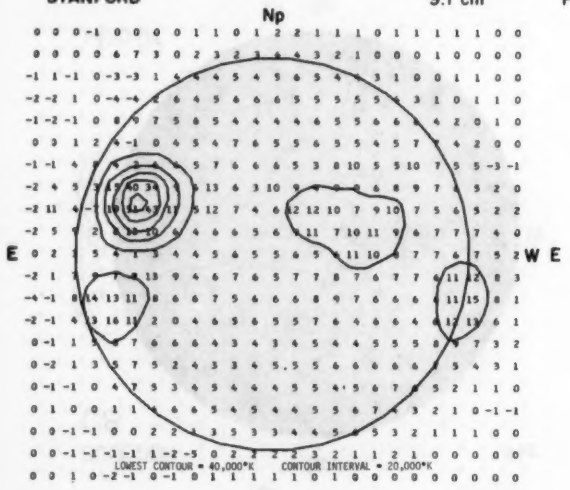


Levels
±5
±10
±20
±40
±80

23.55-24.91 UT

STANFORD

9.1 cm



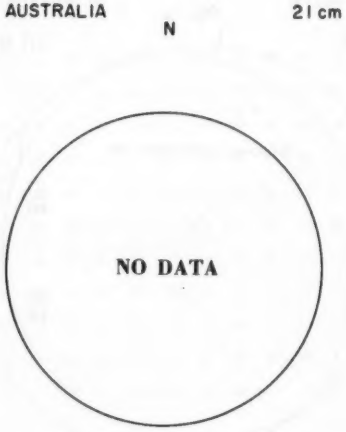
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

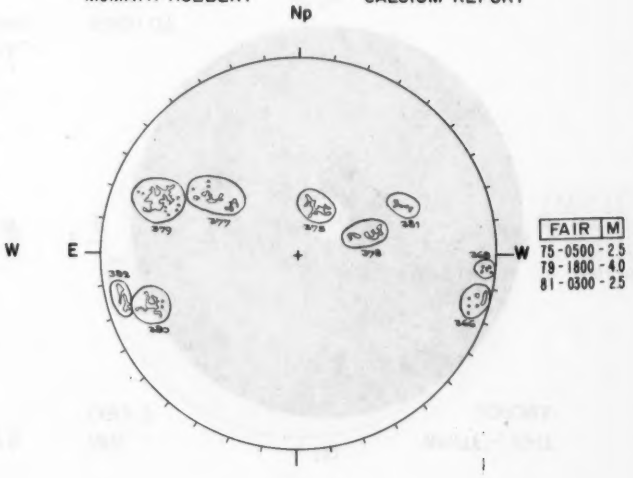


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR	M
75 - 0500 - 2.5	
79 - 1800 - 4.0	
81 - 0300 - 2.5	

1300 UT

Sp
20-21 UT

Brightness Unit 5,000° K

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

1300 UT

BOULDER
09

Np

Hα

E

W

1835 UT

Sp

BOULDER

Np

SUNSPOTS

379

375

380

E

W

No Prominence Drawing

CORONA
NORIKURA

1530 UT

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

0756 UT

Sp

Np

NASA GSFC
OSO-7

Np

E

W

08/2321UT

Sp

FE XV
284 A

COUNT = 65552
ROLL = 53.0°
P-TH = -7.25

NRL
OSO-7

171-630A

"During the early part of June the NRL instrument began to suffer a gradual disintegration of the XUV filter which previously limited the wavelength to the band 170 - 630 Å. The band extends now to nearly 1600 Å, and the XUV image is diluted mainly with chromospheric Lyman-α radiation. The contrast is therefore lower and the intensity counts higher."

E

NO DATA

W

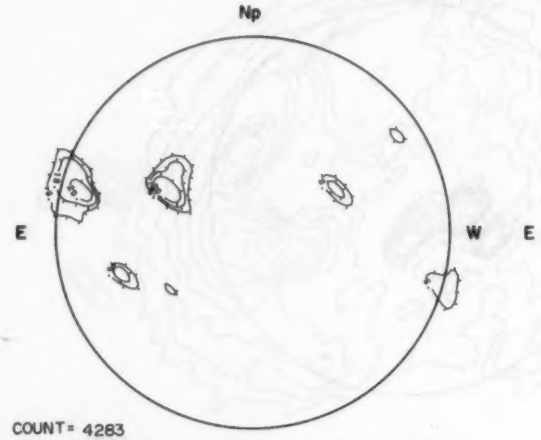
COUNT=

Sp

JUNE 10, 1973 (P = -11.97, B_o = 0.45, L_o = 250.50)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4283
ROLL = 50.5°
P-TH = -7.24

2247 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

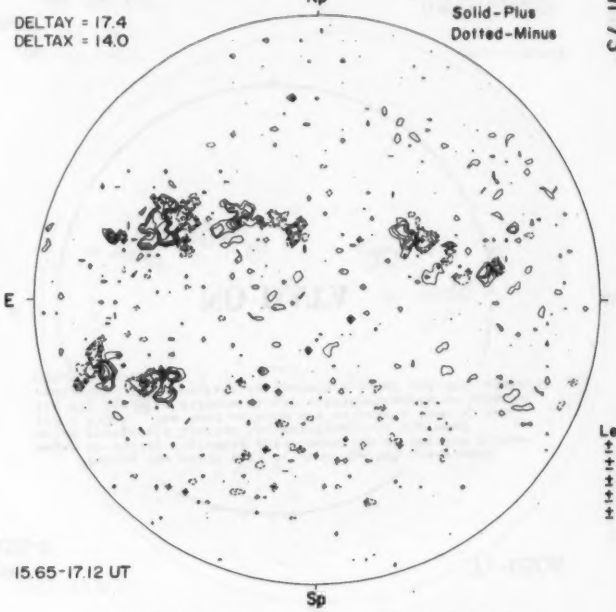
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

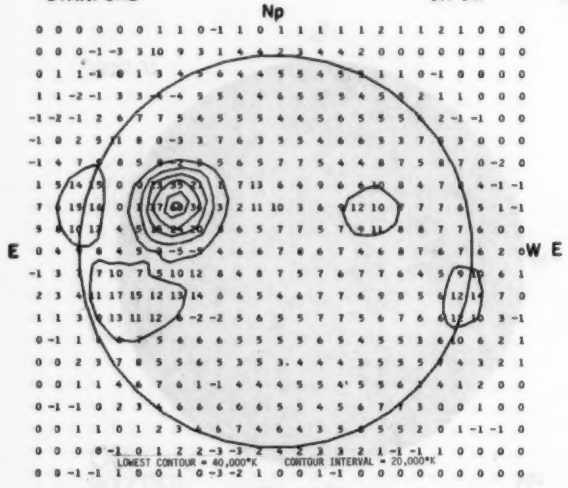


Levels
±5
±10
±20
±40
±80

15.65-17.12 UT

STANFORD

9.1 cm



Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

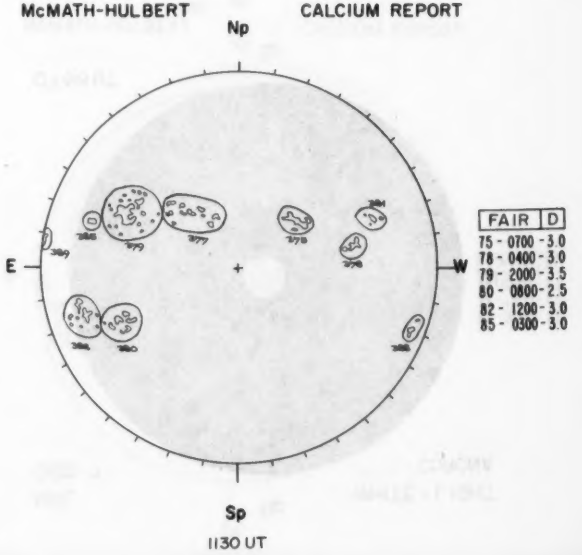
21 cm

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



1130 UT

20-21 UT

02-03 UT Brightness Unit 1,700° K

1130 UT

BOULDER
10

Np

Hα

E

W

1346 UT

Sp

BOULDER

Np

SUNSPOTS

385
379
375
380
382

E

W

No Prominence Drawing

2020 UT

CORONA
KISLOVODSK

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

0700 UT

Sp

NASA GSFC
OSO-7

Np

FE XV
284A

E

W

COUNT= 74864
ROLL = 50.5°
P-TH = -7.24

2247 UT

Sp

NRL
OSO-7

Np

171-630A

E

W

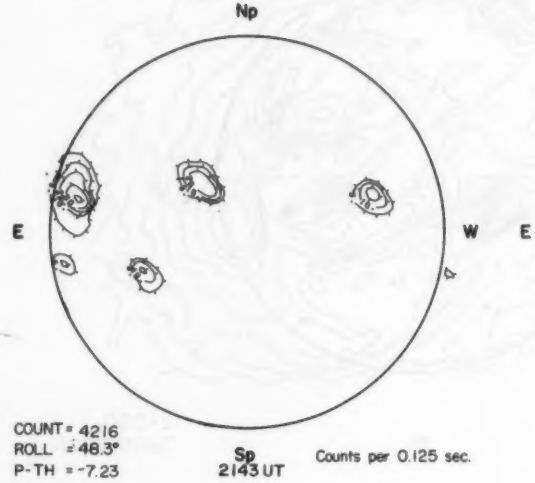
2343 UT
COUNT= 183503

43
Jun 73

JUNE 11, 1973 (P=-11.56, B_o= 0.57, L_o= 237.27)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4216
ROLL = 48.3°
P-TH = -7.23

2143 UT

Counts per 0.125 sec.

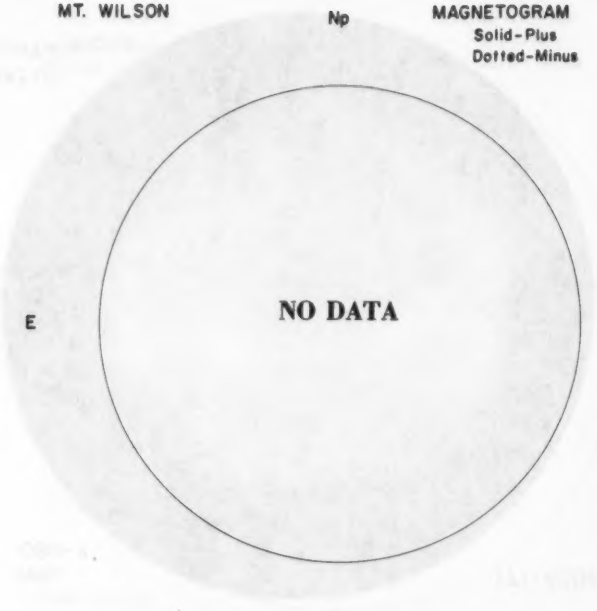
PROSPECT HILL
AFCRL

8.6 mm

Contours in Intervals of 200° K

MT. WILSON

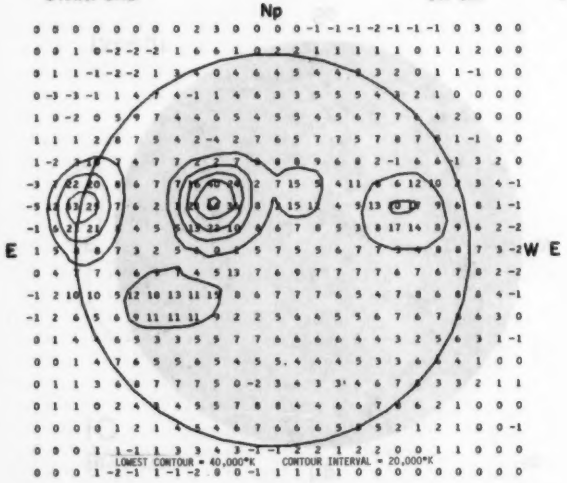
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm



20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

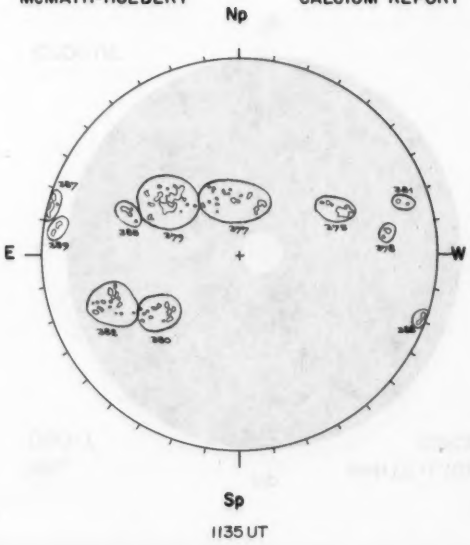
21 cm

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR	D
75 - 0800 - 3.0	
79 - 1700 - 3.0	
82 - 1000 - 2.5	
87 - 1400 - 2.5	

1135 UT

BOULDER

20-21 UT Brightness Unit 5,000° K

02-03 UT Resolution 3 Minutes of Arc Brightness Unit 1,700° K

1135 UT

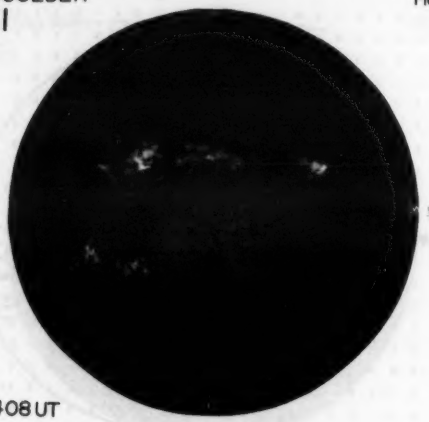
BOULDER
11

Np

Hα

E

W



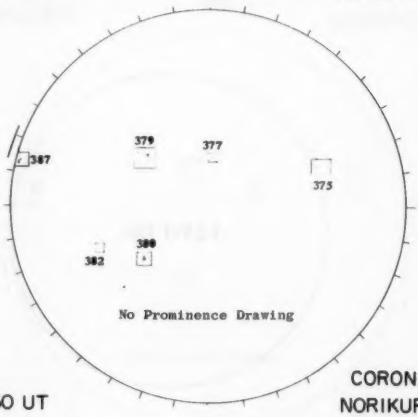
1408 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1430 UT

CORONA
NORIKURA

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

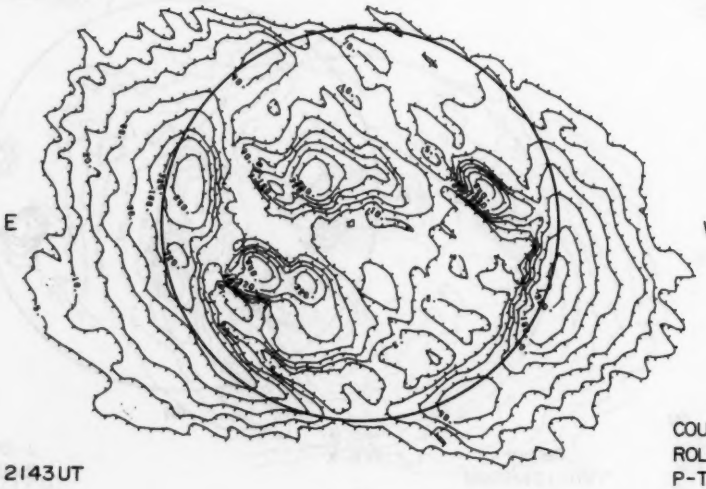
W

0722 UT

Sp

NASA GSFC
OSO-7

Np



E

W

2143 UT

Sp

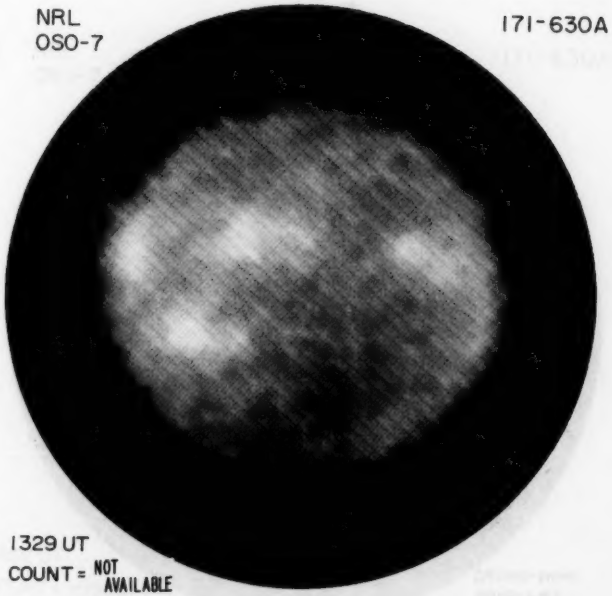
FE XV
284A

COUNT = 79199
ROLL = 48.3°
P-TH = -7.23

Np

NRL
OSO-7

171-630A



E

W

1329 UT

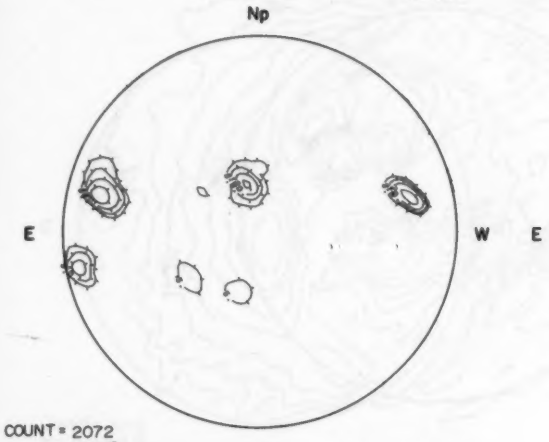
COUNT = NOT AVAILABLE

Sp

JUNE 12, 1973 (P=-11.14, B_o = 0.69, L_o = 224.03)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 2072
ROLL = 46.7°
P-TH = -7.22

1717 UT

Counts per 0.125 sec.

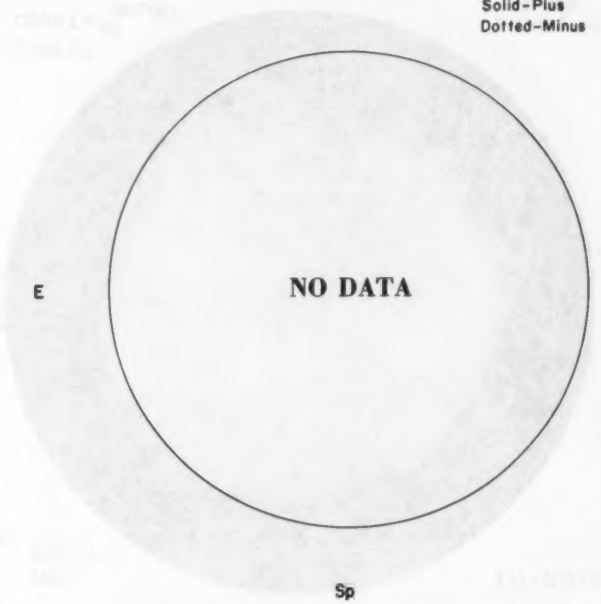
PROSPECT HILL
AFCRL

8.6 mm

Contours in Intervals of 200° K

MT. WILSON

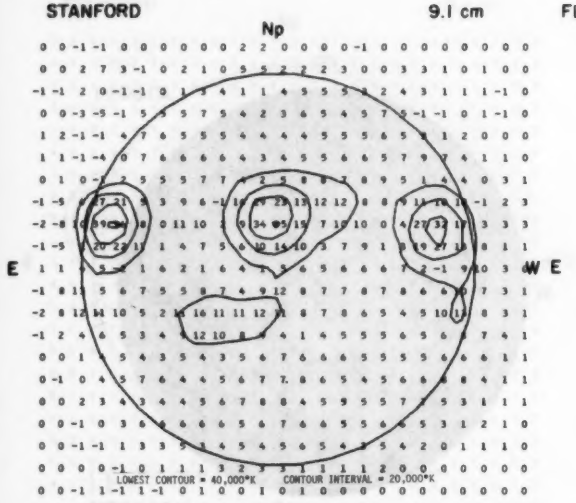
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm

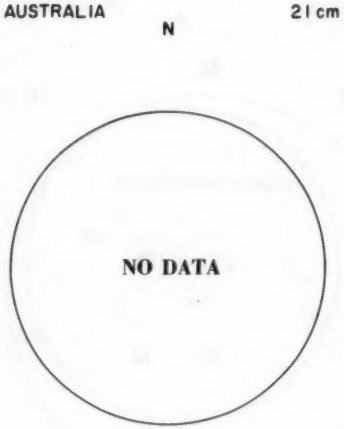


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

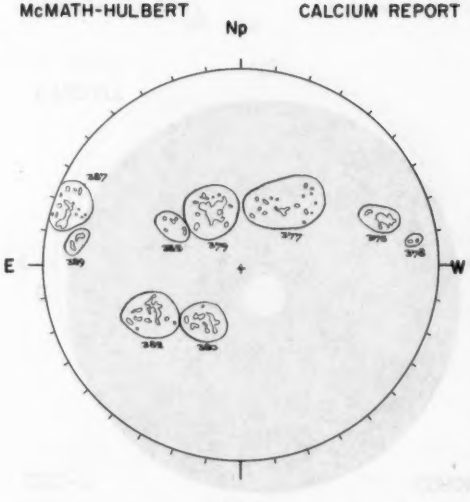


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR S
75 - 1200 - 3.5
79 - 2000 - 3.5
80 - 0900 - 2.5
82 - 1200 - 3.0
85 - 0300 - 2.5
87 - 2300 - 4.0

1200 UT

Sp

20-21 UT

Brightness Unit 5,000° K

02-03 UT

Resolution 3 Minutes of Arc

Brightness Unit 1,700° K

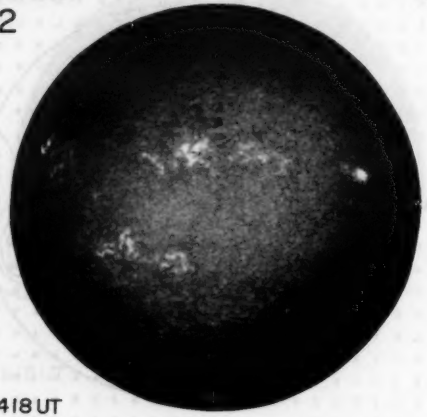
1200 UT

BOULDER

12

Np

Hα



E

W

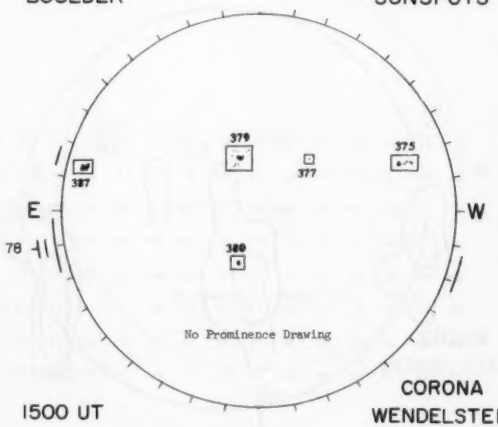
1418 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1500 UT

CORONA

WENDELSTEIN

Sp

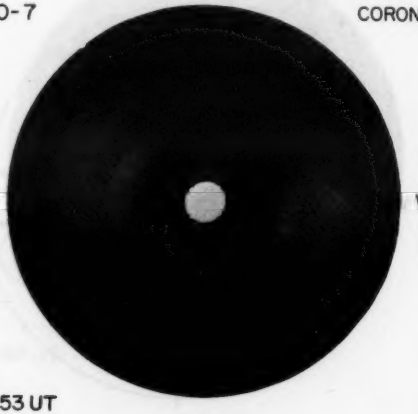
NRL

OSO-7

Np

WHITE-LIGHT

CORONA



E

W

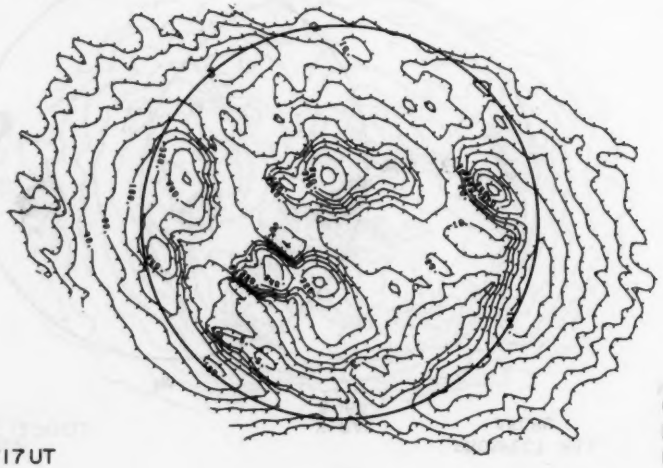
0753 UT

Sp

NASA GSFC

OSO-7

Np



E

W

1717 UT

Sp

FE XV

284 A

COUNT = 85847

ROLL = 46.7°

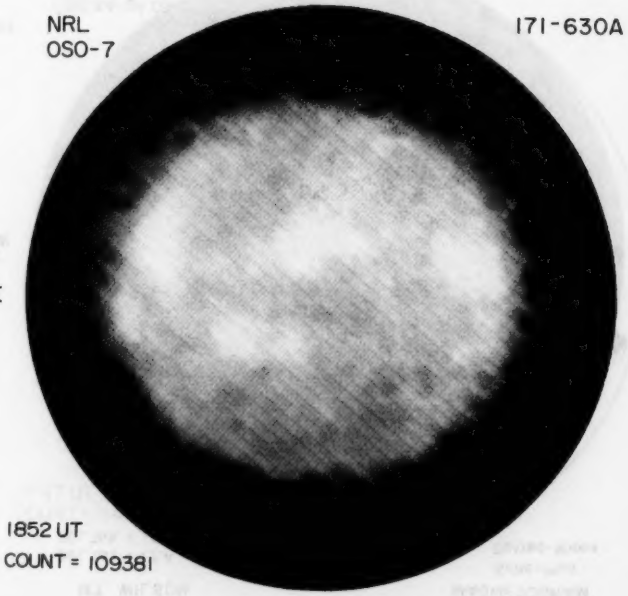
P-TH = -7.22

Np

NRL

OSO-7

171-630A



E

W

1852 UT

COUNT = 109381

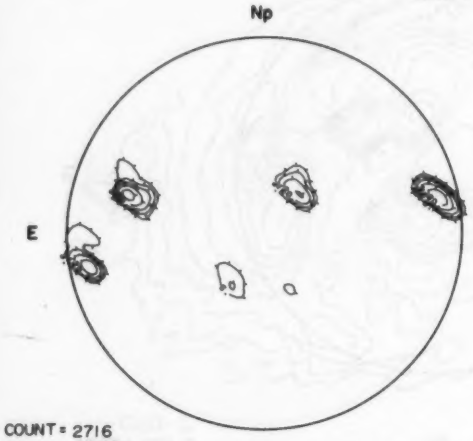
47

Jun 73

JUNE 13, 1973 (P=-10.72, B_o = 0.81, L_o = 210.79)

NASA GSFC
OSO-7

X-RAY
8-16A



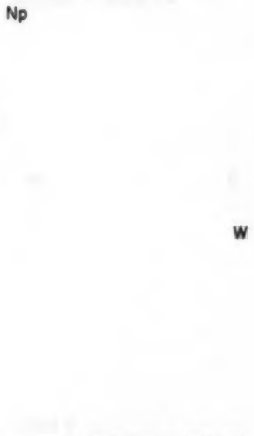
COUNT = 2716
ROLL = 44.2°
P-TH = -7.21

1750 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

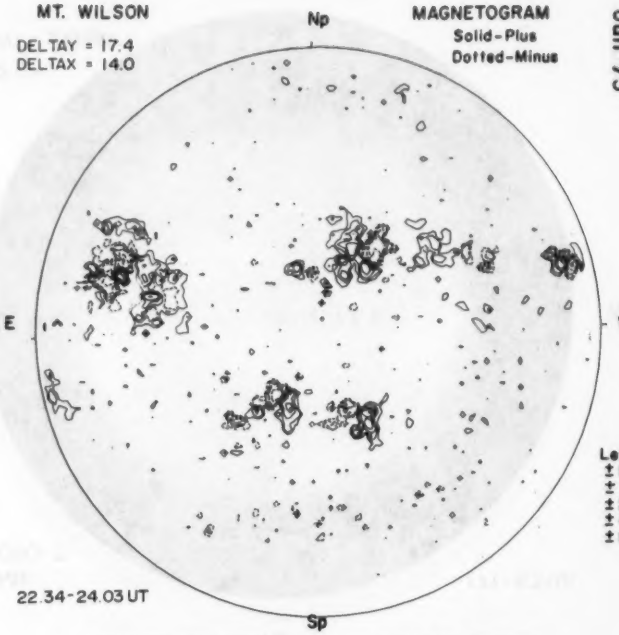


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

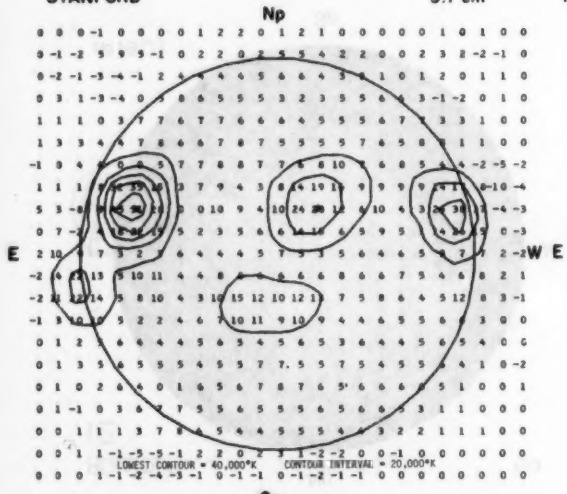


Levels
±5
±10
±20
±40
±80

22.34-24.03 UT

STANFORD

9.1 cm



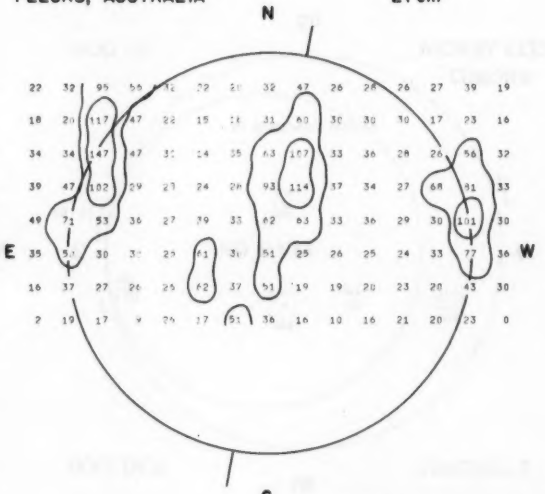
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

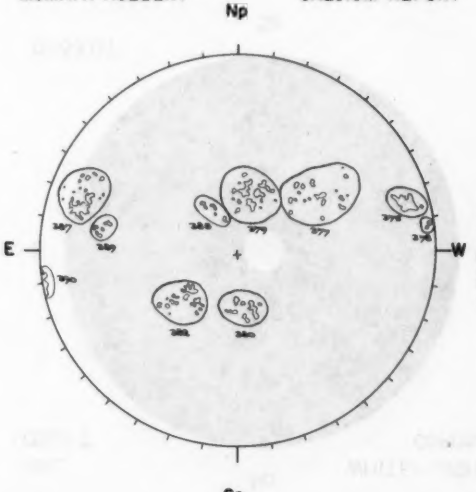


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



FAIR	D
75 - 1600 - 3.5	
79 - 1700 - 3.5	
80 - 0900 - 2.5	
82 - 1200 - 3.0	
87 - 2300 - 3.5	

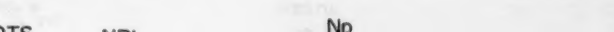
1130 UT

BOULDER

Hα

BOULDER

SUNSPOTS



20-21 UT

Brightness Unit 5,000° K

02-03 UT

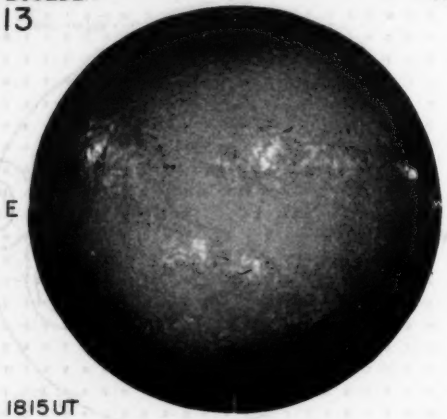
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

1130 UT

BOULDER
13

Np

Hα

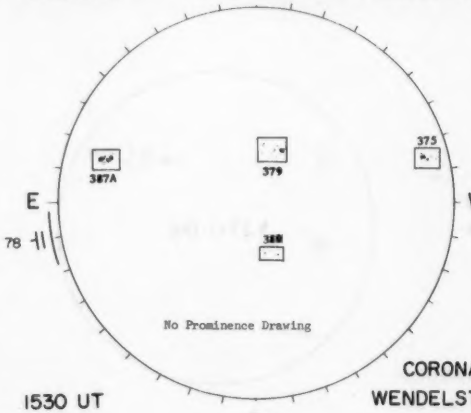


1815 UT

BOULDER

Np

SUNSPOTS



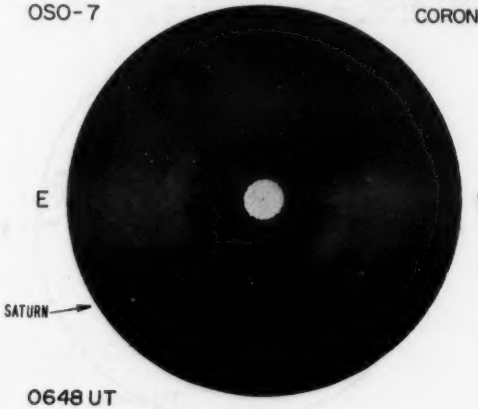
1530 UT

CORONA
WENDELSTEIN

NRL
OSO-7

Np

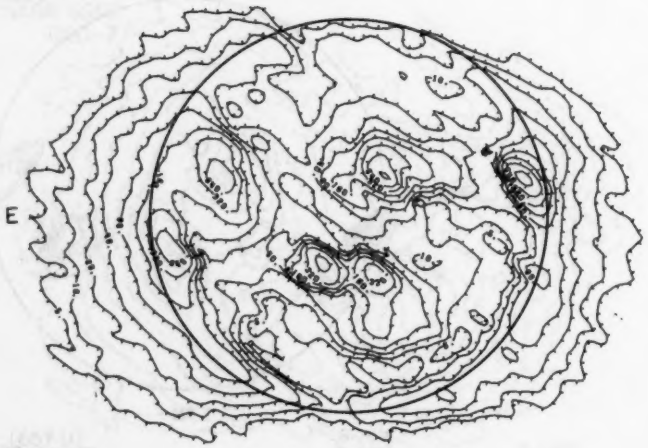
WHITE-LIGHT
CORONA



0648 UT

NASA GSFC
OSO-7

Np



1750 UT

FE XV
284A

COUNT = 74263
ROLL = 44.2°
P-TH = -7.21

NRL
OSO-7

Np

171-630A

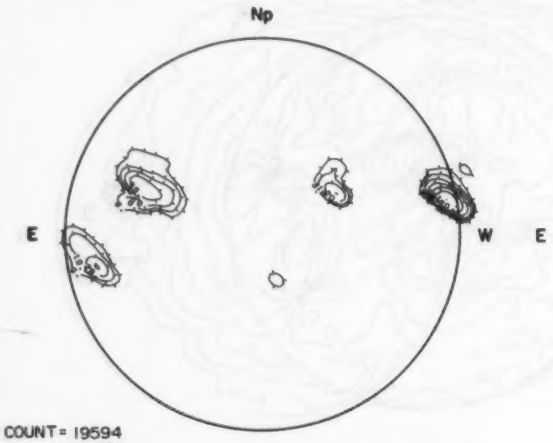
1747 UT
COUNT = 114720

49
Jun 73

JUNE 14, 1973 (P = -10.30, B_o = 0.93, L_o = 197.56)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 19594
ROLL = 41.8°
P-TH = -7.19

1657 UT

Counts per 0.125 sec.

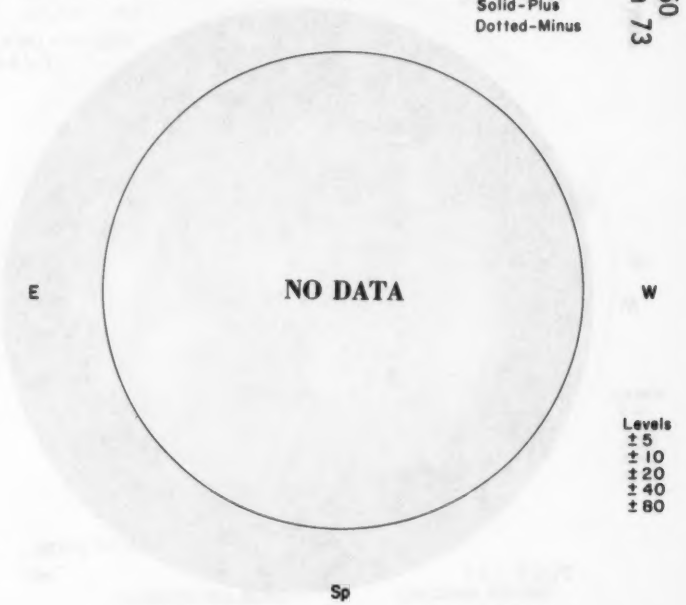
PROSPECT HILL
AFCRL

8.6 mm

Contours in intervals of 200° K

MT. WILSON

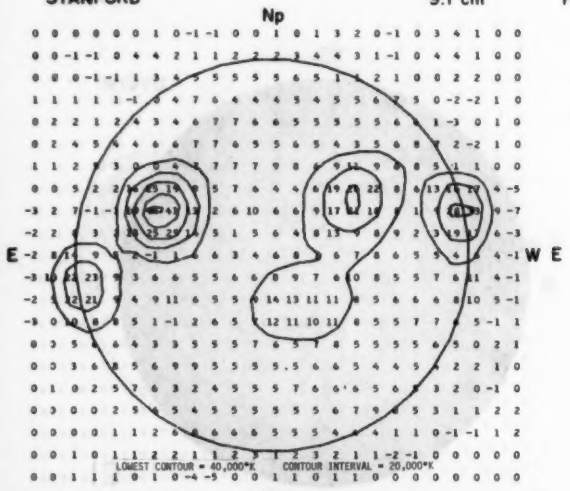
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

STANFORD

9.1 cm



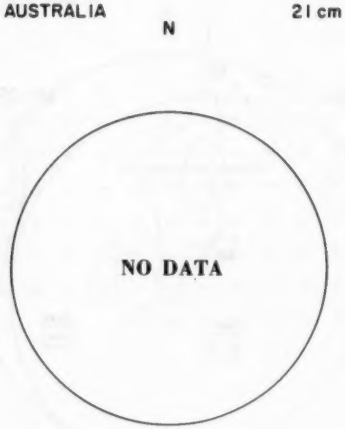
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

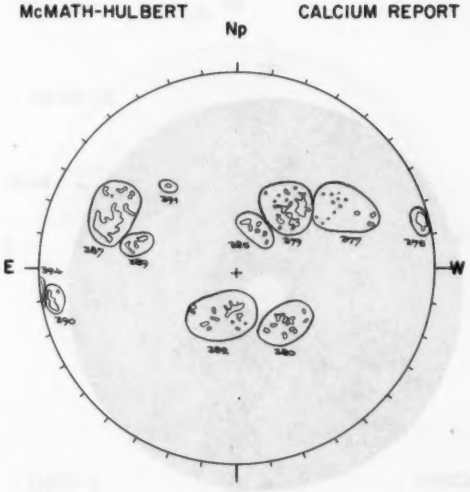


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR | S
75 - 2100 - 4.0
79 - 2000 - 3.0
82 - 1200 - 2.5
87 - 3100 - 3.5
90 - 1000 - 3.0

1130 UT

BOULDER

Np

Hα

BOULDER

Np

SUNSPOTS

"After June 14th each corona picture is a composite made from several partial images, or an averaged image

Sp

20-21 UT Brightness Unit 5,000° K

02-03 UT Resolution 3 Minutes of Arc Brightness Unit 1,700° K

Sp

1130 UT

BOULDER

14

Np

Hα

E W

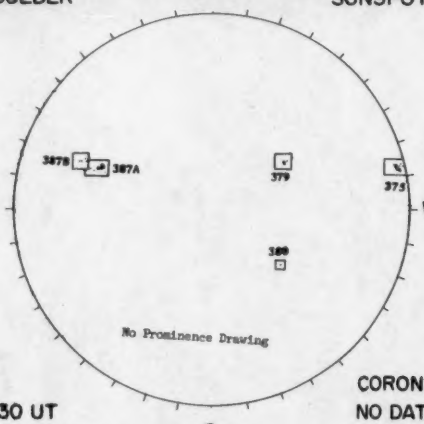
1602 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1630 UT

Sp

CORONA NO DATA

"After June 14th each corona picture is a composite made from several partial images, or an averaged image made from double or multiple exposures. The times given are those of the first and last exposures in each image."

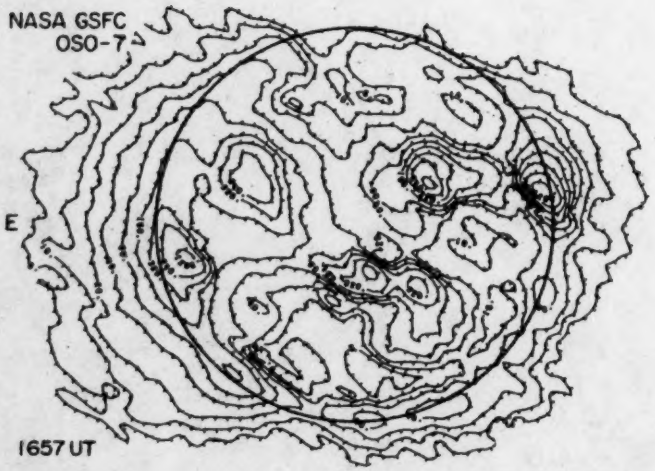
E W

0719-0846 UT

Sp

Np

NASA GSFC OSO-7



E W

1657 UT

Sp

FE XV 284A

COUNT = 127184

ROLL = 41.8°

P-TH = -7.19

Np

NRL OSO-7

171-630A

E W

2313 UT

COUNT = 121900

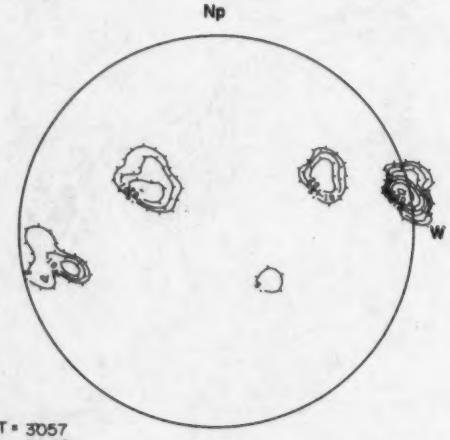
51

Jun 73

JUNE 15, 1973 (P=-9.87, B_o = 1.05, L_o = 184.32)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3057
ROLL = 39.6°
P-TH = -7.17

1536 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

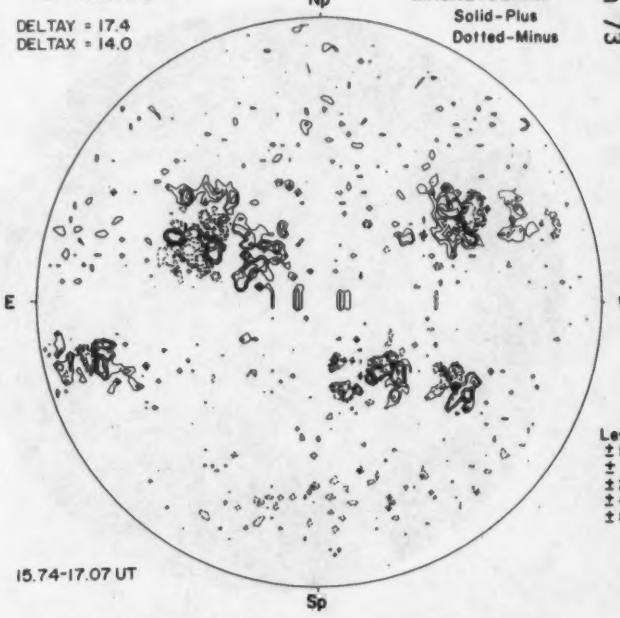
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

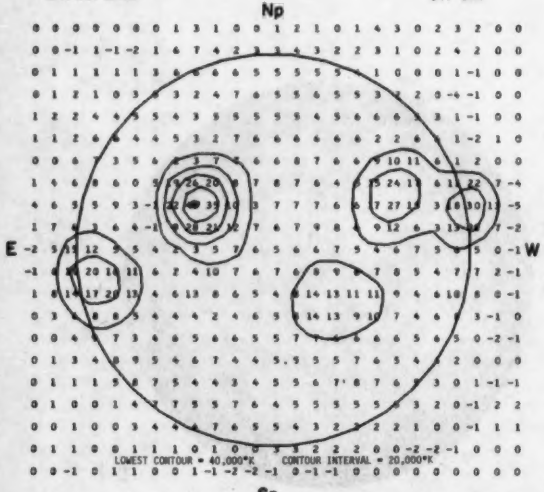


Levels
±5
±10
±20
±40
±80

15.74-17.07 UT

STANFORD

9.1 cm

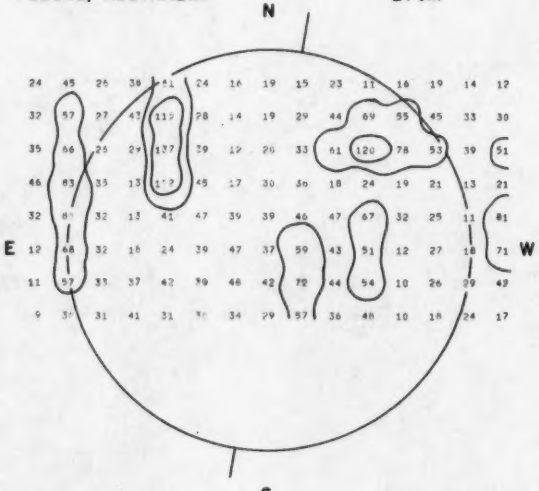


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

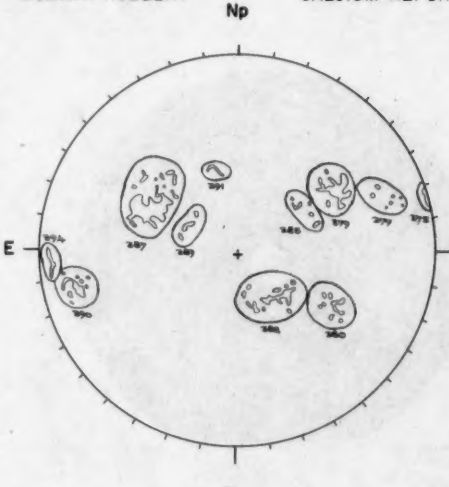


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



GOOD	M
75-1500	4.0
79-2100	3.0
82-1400	2.5
87-3100	3.5
90-1300	3.0

1410 UT

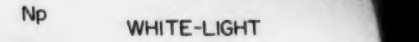
BOULDER

Hα

BOULDER

SUNSPOTS

NRL



WHITE-LIGHT

20-21 UT

Brightness Unit 3,000° K

02-03 UT

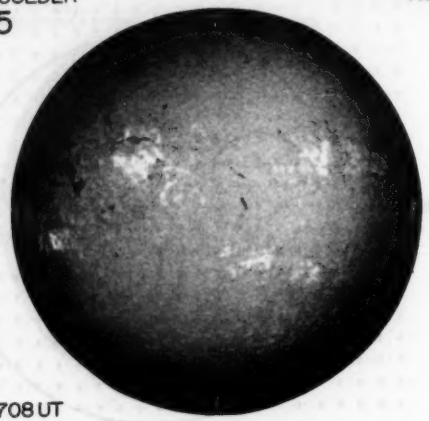
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

1410 UT

BOULDER
15

Np

Hα



E

W

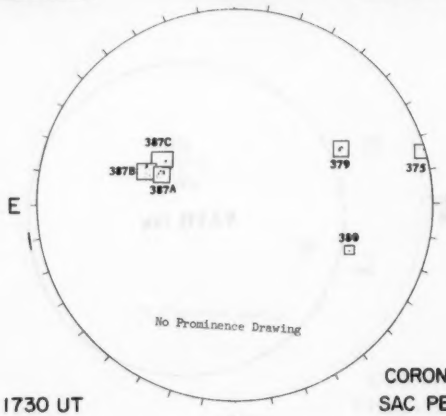
1708 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1730 UT

CORONA
SAC PEAK

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

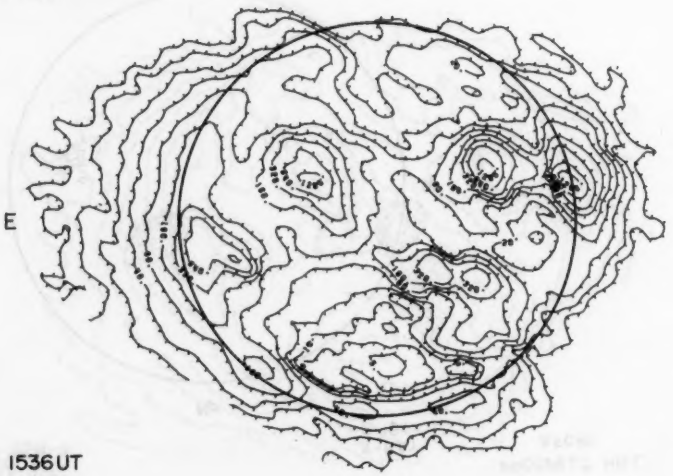
1840-2158 UT

Sp

Np

NASA GSFC
OSO-7

Np



E

W

1536 UT

Sp

FE XV
284A

COUNT = 106589
ROLL = 39.6°
P-TH = -7.17

NRL
OSO-7

171-630A

E

W

COUNT =

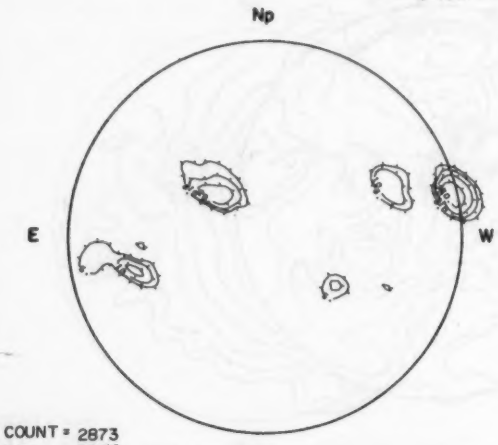
Sp

53
Jun 73

JUNE 16, 1973 (P=-9.44, B_o = 1.17, L_o = 171.08)

NASA GSFC
OSO-7

X-RAY
8-16A



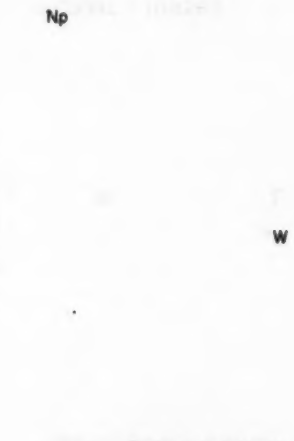
COUNT = 2873
ROLL = 38.3°
P-TH = -7.16

0517 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

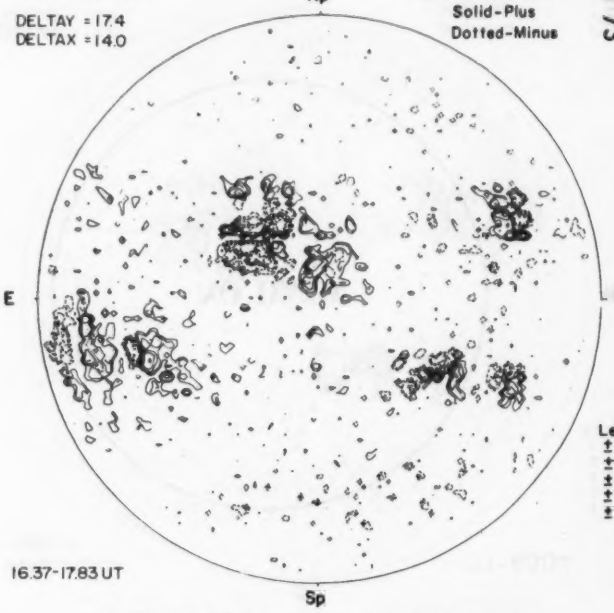


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

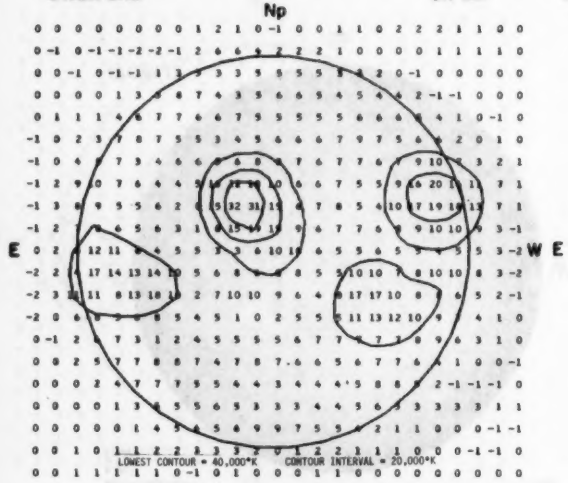


Levels
±5
±10
±20
±40
±80

16.37-17.83 UT

STANFORD

9.1 cm



LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

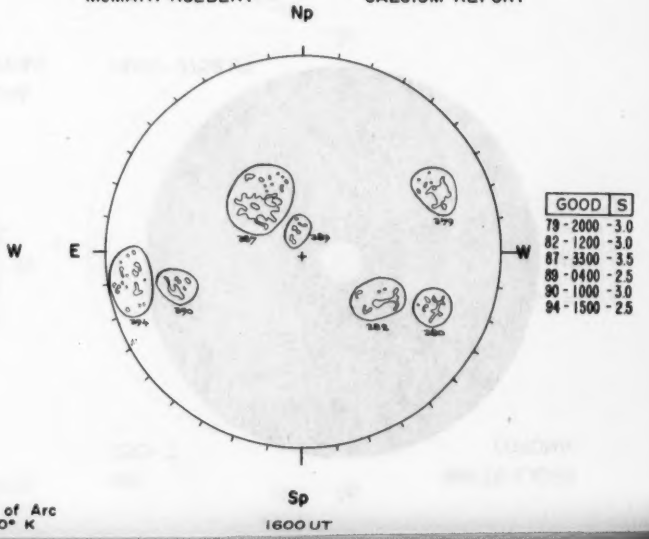
21 cm

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



GOOD	S
79 - 2000	-3.0
82 - 1200	-3.0
87 - 3300	-3.5
89 - 0400	-2.5
90 - 1000	-3.0
94 - 1500	-2.5

1600 UT

BOULDER

Hα

BOULDER

SUNSPOTS

NRL

WHITE-LIGHT

20-21 UT
Brightness Unit 5,000° K

02-03 UT
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

1600 UT

BOULDER
16

Np

Hα

E

W

Sp

1932 UT

BOULDER

Np

SUNSPOTS

387B
387A
379
382
380

No Prominence Drawing

E

W

CORONA
KISLOVODSK

1730 UT

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

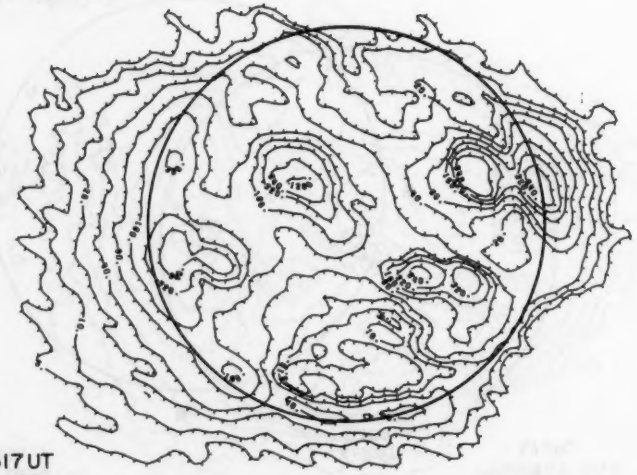
W

1747-2232 UT

Sp

NASA GSFC
OSO-7

Np



0517 UT

Sp

FE XV
284A

W

COUNT = 105456
ROLL = 38.3°
P-TH = -7.16

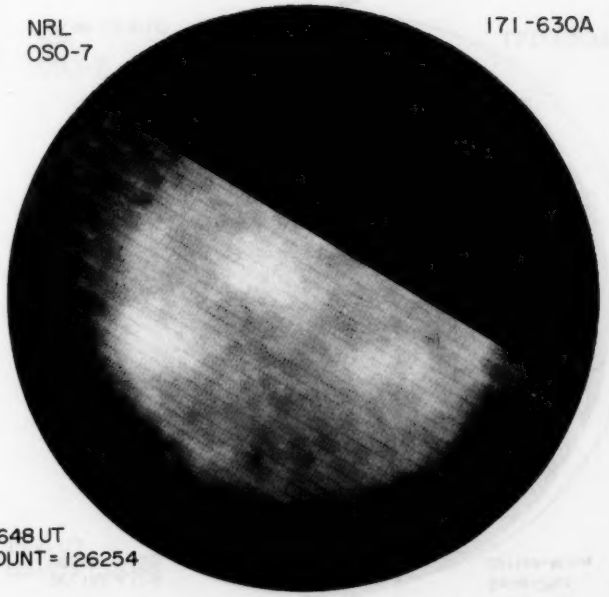
Np

NRL
OSO-7

171-630A

E

W



0648 UT
COUNT = 126254

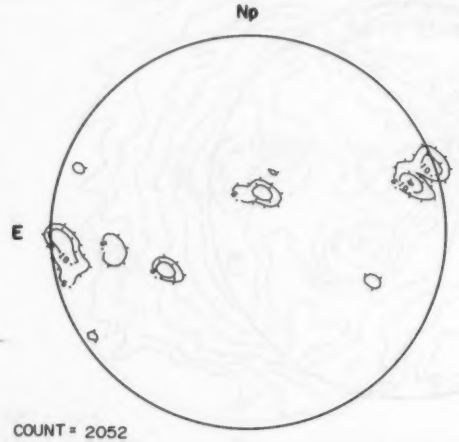
Sp

55
Jun 73

JUNE 17, 1973 (P=-9.01, B_o = 1.29, L_o = 157.84)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 2052
ROLL = 36.7°
P-TH = -7.13

1503 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

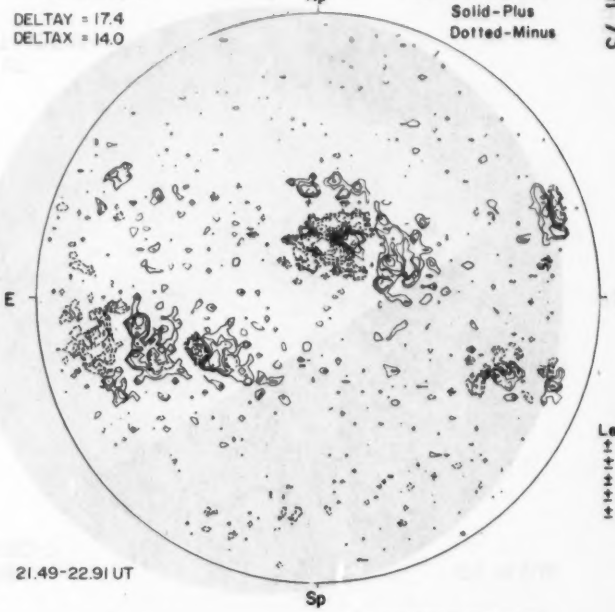
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

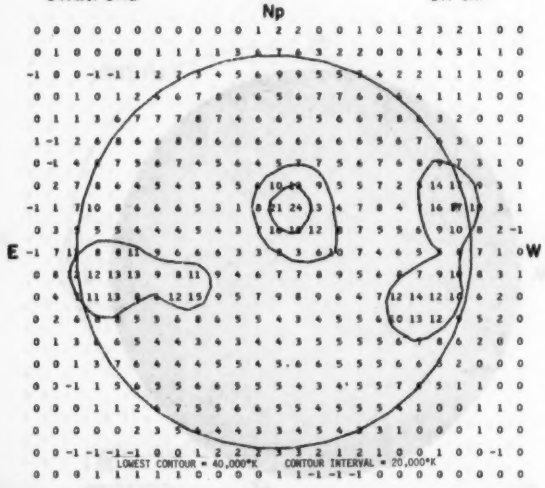


Levels
±5
±10
±20
±40
±80

21.49-22.91 UT

STANFORD

9.1 cm



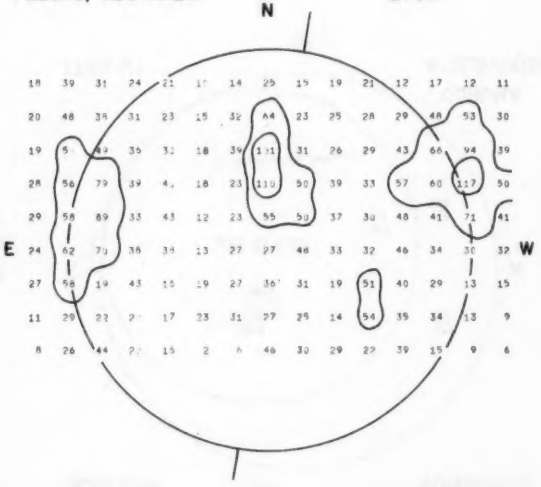
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

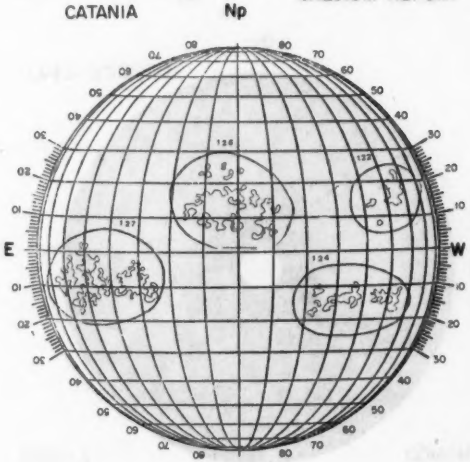


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

CATANIA

CALCIUM REPORT



GOOD	EC
22 - 2289	---
24 - 2690	---
26 - 6966	---
27 - 7727	---

0607 UT

BOULDER

Hα

BOULDER

SUNSPOTS

NRL

WHITE LIGHT

20-21 UT

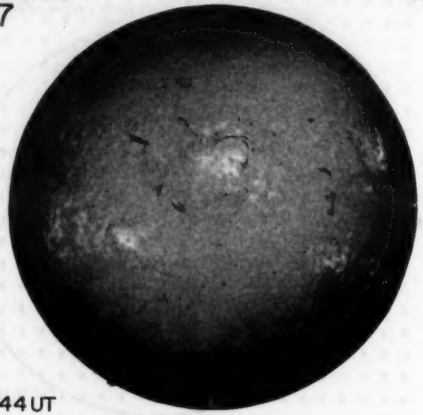
02-03 UT Brightness Unit 1,700° K

0607 UT

BOULDER
17

Np

Hα



E

W

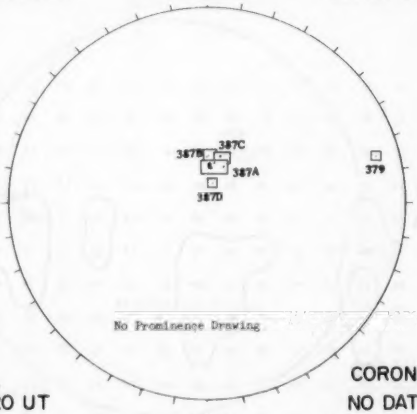
1744 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1720 UT

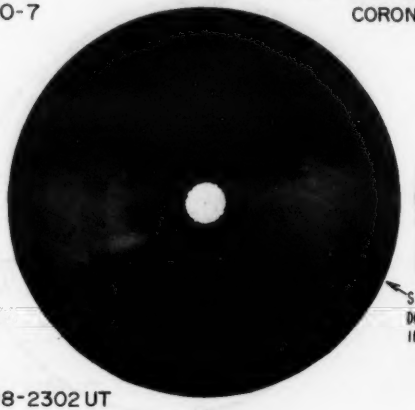
CORONA
NO DATA

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



E

W

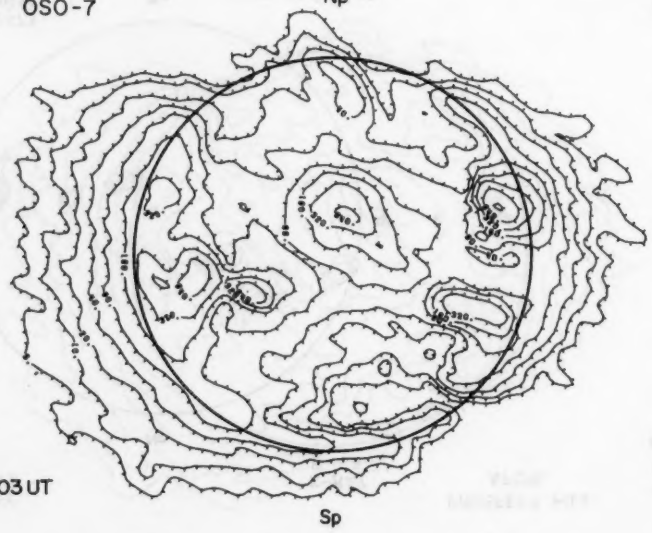
SATURN
DOUBLE
IMAGE

1818-2302 UT

Sp

NASA GSFC
OSO-7

Np



E

W

1503 UT

Sp

FE XV
284 A

COUNT = 99645
ROLL = 36.7°
P-TH = -7.13

Np

NRL
OSO-7

171-630A

E

W

1500 UT
COUNT = 152086

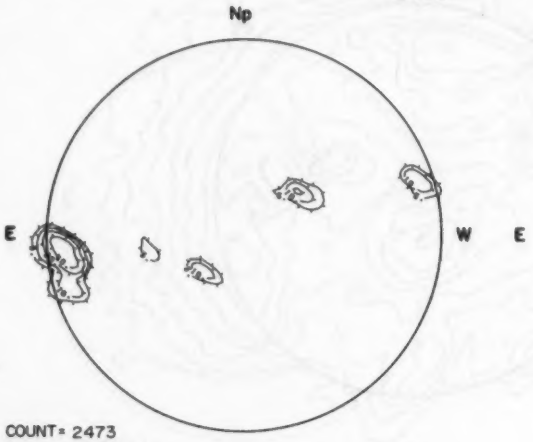
Sp

57
Jun 73

JUNE 18, 1973 (P = -8.58, B_o = 1.41, L_o = 144.61)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 2473
ROLL = 36.8°
P-TH = -7.11

1535 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

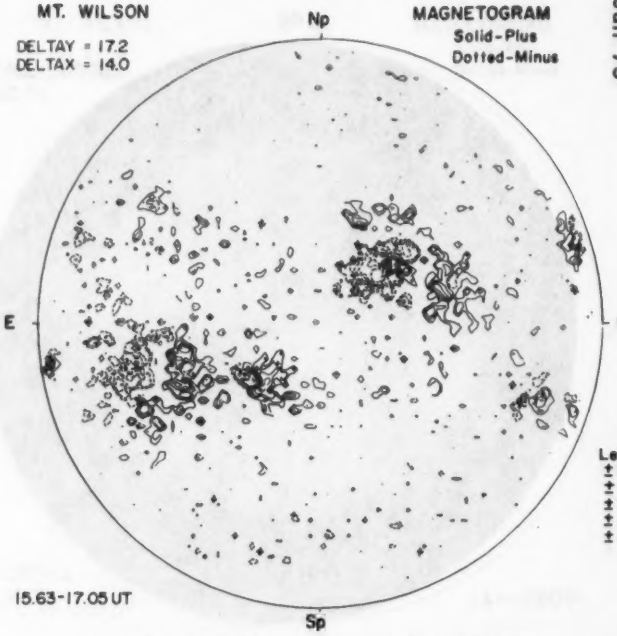
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.2
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

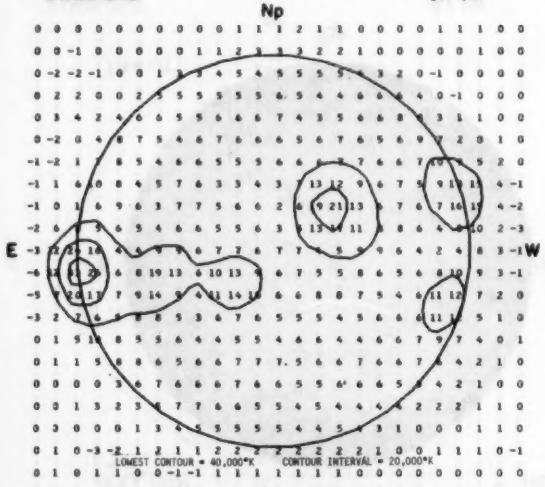


Levels
±5
±10
±20
±40
±80

15.63-17.05 UT

STANFORD

9.1 cm

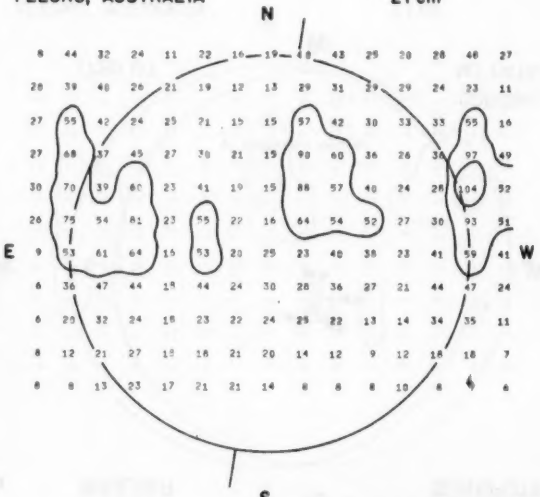


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

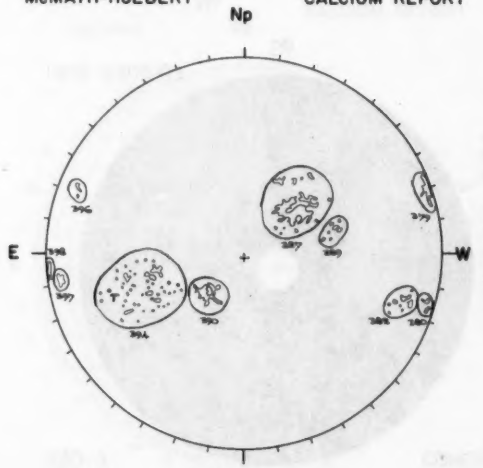


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR	M
79 - 1700	- 2.5
87 - 3000	- 3.5
90 - 0900	- 3.0
94 - 1500	- 2.5
97 - 0800	- 4.0

1845 UT

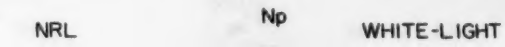
BOULDER

Hα

BOULDER

SUNSPOTS

NRL

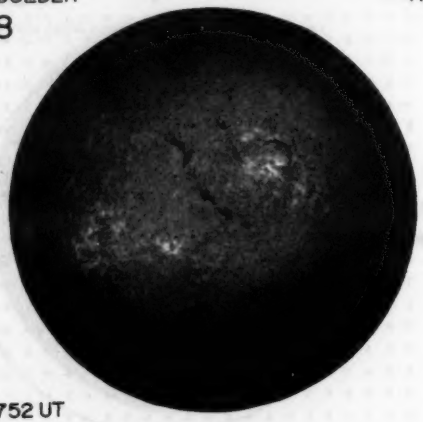


WHITE-LIGHT

BOULDER
18

Np

Hα



E W

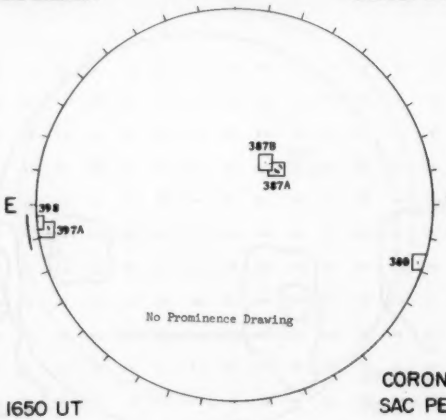
1752 UT

Sp

BOULDER

Np

SUNSPOTS



E W

1650 UT

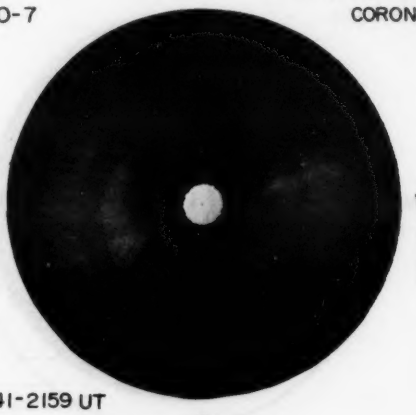
CORONA
SAC PEAK

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



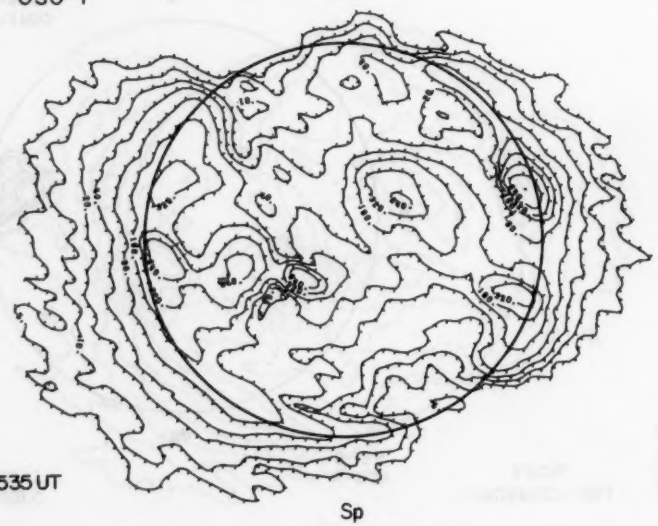
E W

1841-2159 UT

Sp

NASA GSFC
OSO-7

Np



E W

1535 UT

Sp

FE XV
284A

COUNT = 105346
ROLL = 36.8°
P-TH = -7.11

Np

NRL
OSO-7

171-630A

E W

0439 UT
COUNT = 138778

Sp

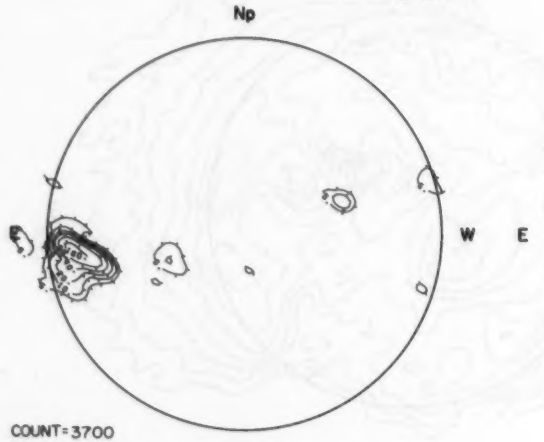
59
Jun 73

JUNE 19, 1973 (P = -8.14, B_o = 1.53, L_o = 131.37)

60 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3700
ROLL = 36.5°
P-TH = -7.08

1609 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

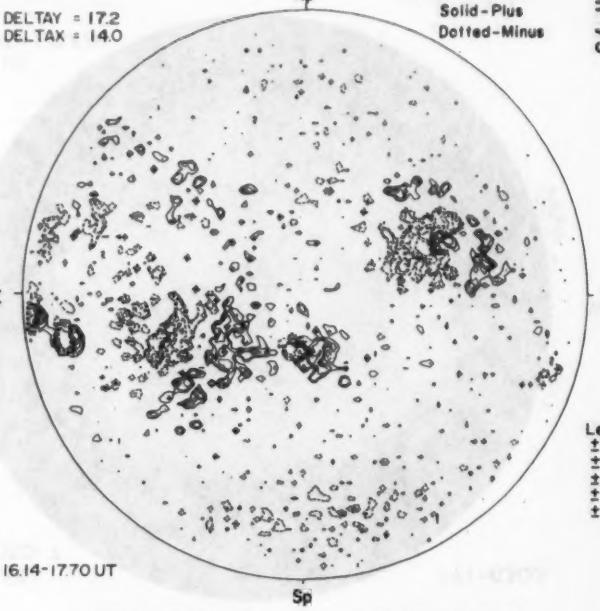
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.2
DELTAX = 14.0

MAGNETOGRAM
Solid - Plus
Dotted - Minus

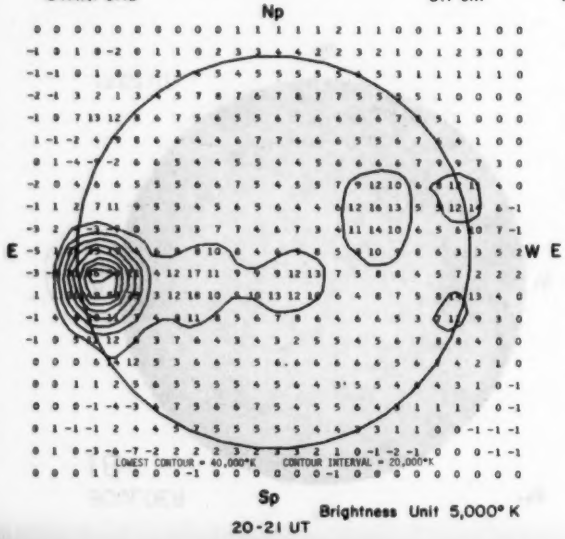


Levels
±5
±10
±20
±40
±80

16.14-17.70 UT

STANFORD

9.1 cm



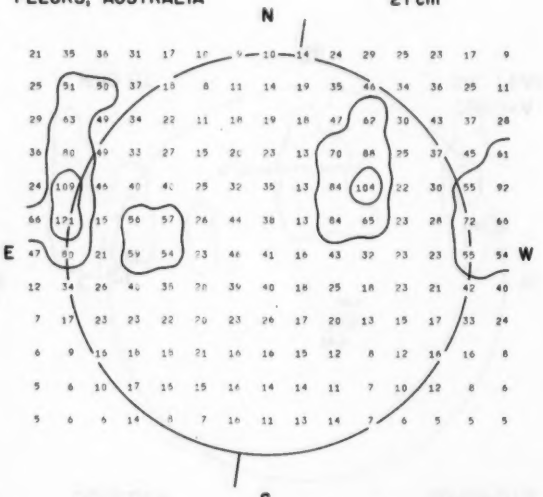
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

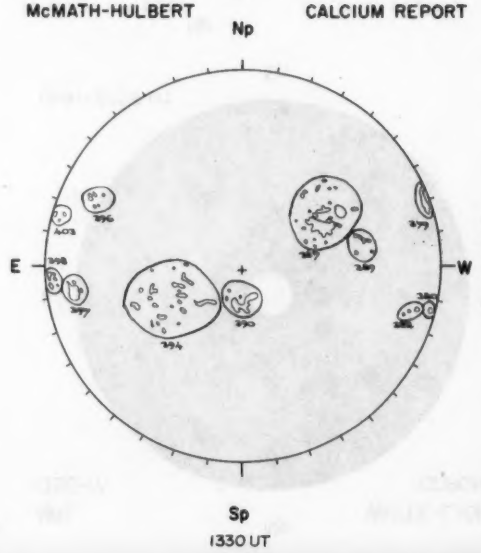


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



FAIR	S
87 - 2700	-3.0
90 - 1000	-3.0
94 - 1800	-2.5
97 - 1200	-4.0
98 - 1200	-3.5

1330 UT

BOULDER

Hα

BOULDER

SUNSPOTS

NRL

WHITE-LIGHT

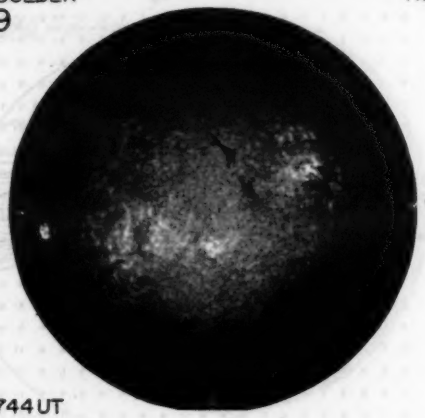
BOULDER
19

Np

Hα

E

W



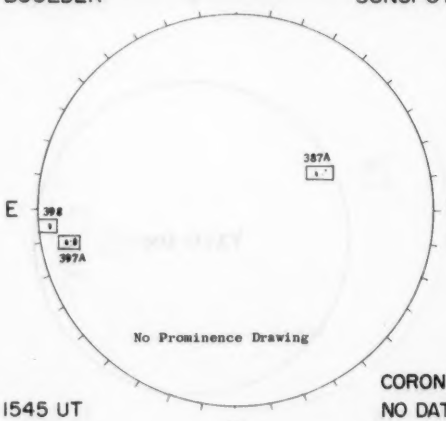
1744 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1545 UT

Sp

CORONA
NO DATA

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

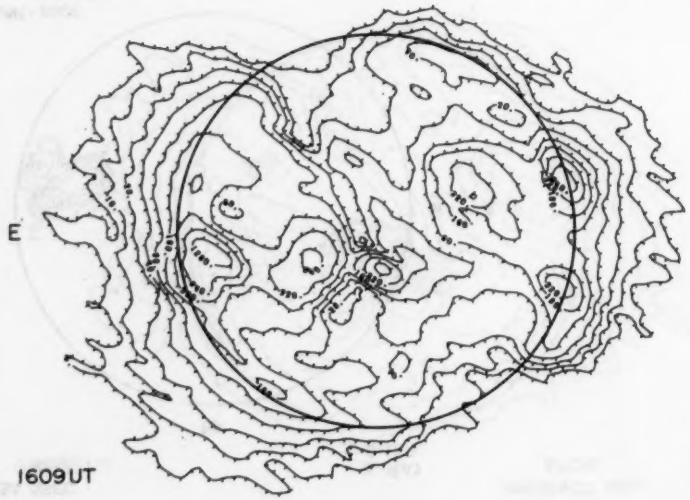
W

1921-2235 UT

Sp

NASA GSFC
OSO-7

Np



E

W

1609 UT

Sp

FE XV
284A

COUNT = 108284
ROLL = 36.5°
P-TH = -7.08

Np

NRL
OSO-7

171-630A

E

W

1250 UT
COUNT = 230310

Sp

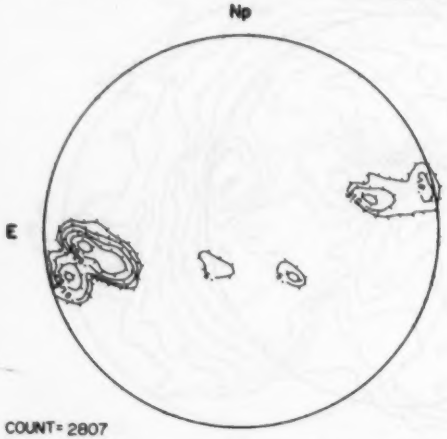
61
Jun 73

JUNE 20, 1973 (P = -7.70, B_o = 1.64, L_o = 118.13)

62
Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 2807
ROLL = 34.8°
P-TH = -7.06

1456 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

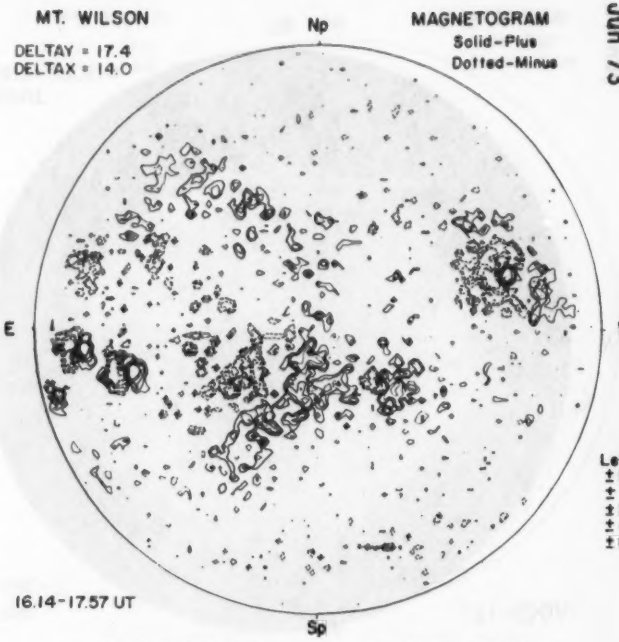
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

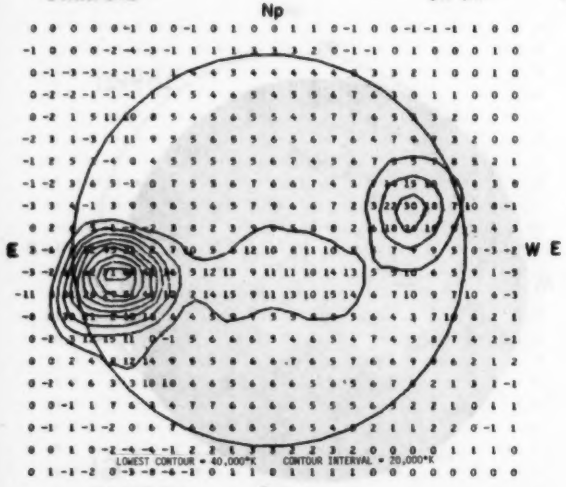


Levels
±5
±10
±20
±40
±80

16.14-17.57 UT

STANFORD

9.1 cm



LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

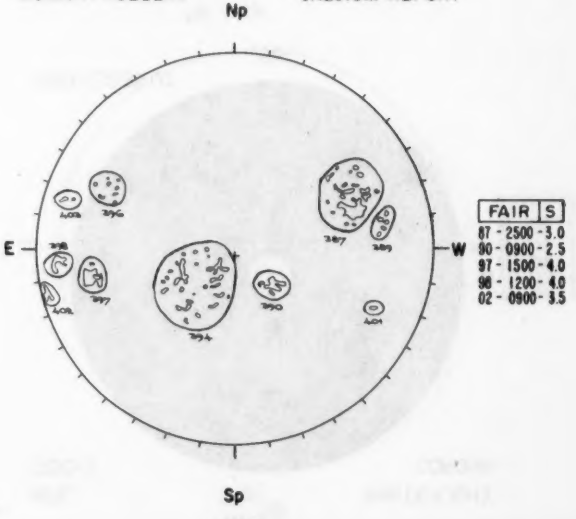
21 cm

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



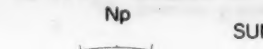
FAIR	S
87 - 2500 - 3.0	
90 - 0900 - 2.5	
97 - 1500 - 4.0	
98 - 1200 - 4.0	
02 - 0900 - 3.5	

1135 UT

BOULDER

Hα

BOULDER



SUNSPOTS

NRL

WHITE-LIGHT

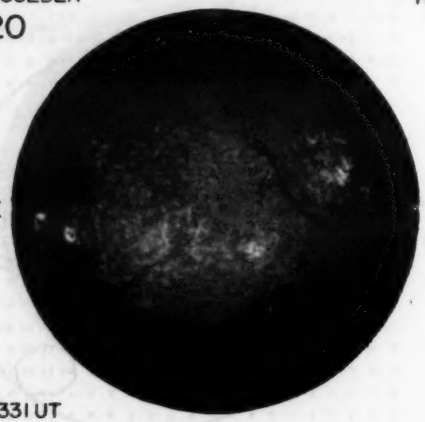
BOULDER
20

Np

Hα

E

W



1331 UT

Sp

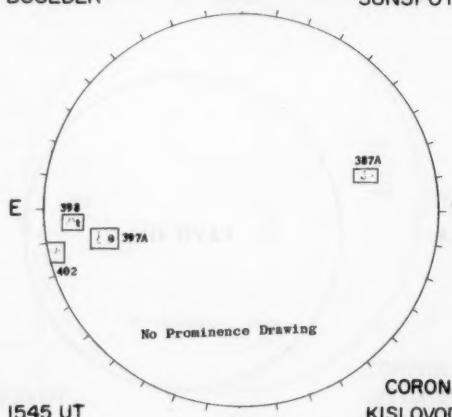
BOULDER

Np

SUNSPOTS

E

W



No Prominence Drawing

1545 UT

CORONA
KISLOVODSK

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

1637-2128 UT

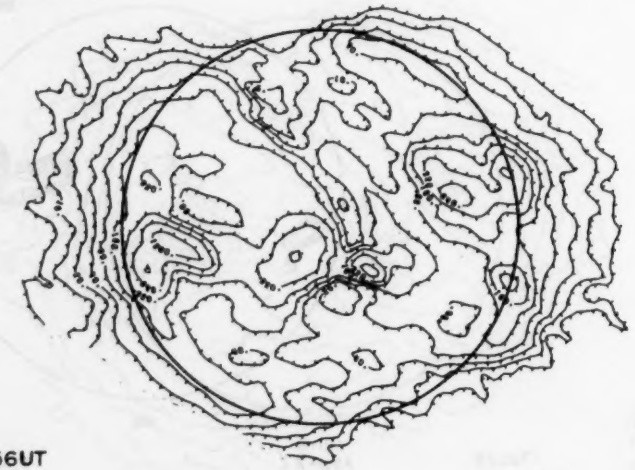
Sp

NASA GSFC
OSO-7

Np

E

W



1456UT

Sp

FE XV
284A

COUNT = 114333
ROLL = 34.8°
P-TH = -7.06

Np

NRL
OSO-7

171-630A

E

W

1320 UT
COUNT= 169859

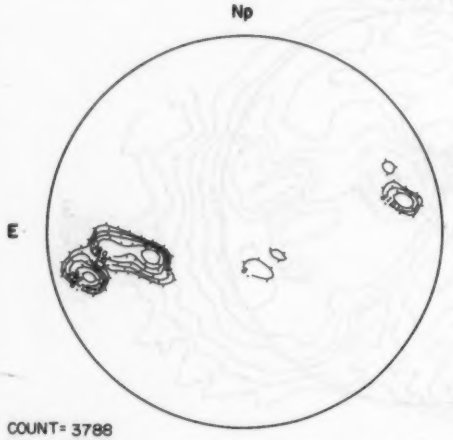
Sp

63
Jun 73

JUNE 21, 1973 (P = -7.26, B_o = 1.76, L_o = 104.89)

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3788
ROLL = 32.9°
P-TH = -7.03

1534 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

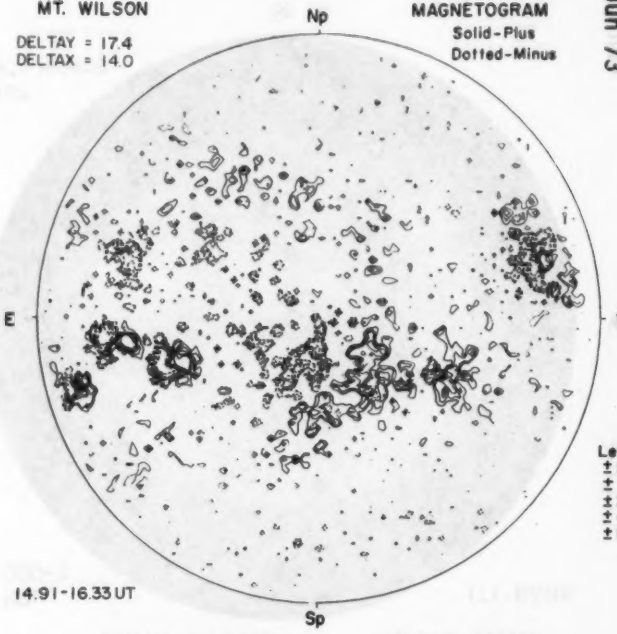
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

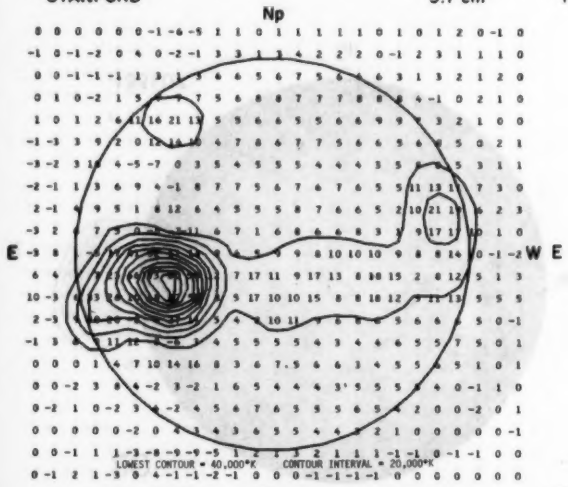


Levels
±5
±10
±20
±40
±80

14.91-16.33 UT

STANFORD

9.1 cm



Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

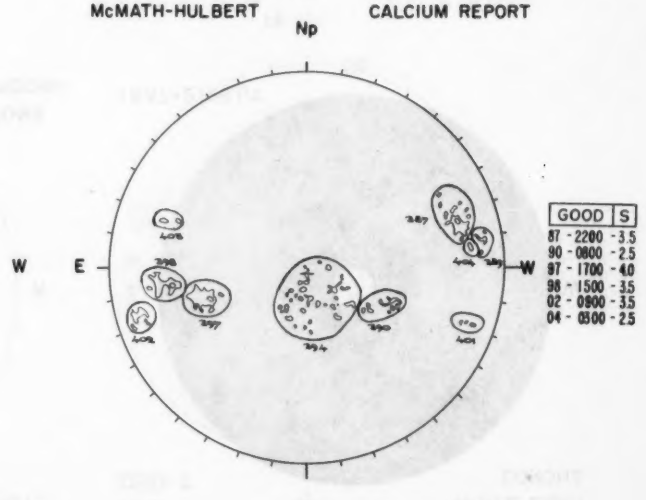
21 cm

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



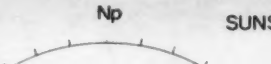
GOOD	S
87 - 2200	3.5
90 - 0800	2.5
97 - 1700	4.0
98 - 1500	3.5
02 - 0900	3.5
04 - 0300	2.5

1245 UT

BOULDER
21

Hα

BOULDER



SUNSPOTS

NRL
OSO-7

WHITE-LIGHT
CORONA

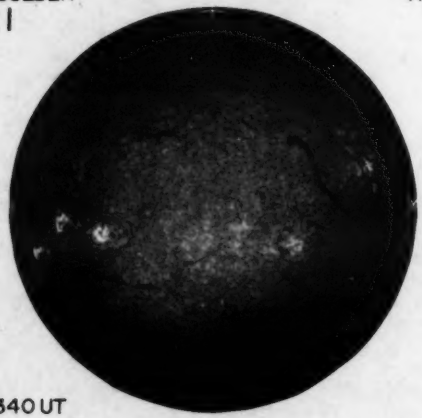
BOULDER
21

Np

Hα

E

W



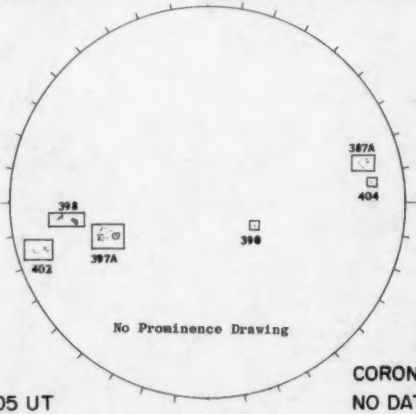
1340 UT

Sp

BOULDER

Np

SUNSPOTS



1405 UT

CORONA
NO DATA

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

1708-2159 UT

Sp

NASA GSFC
OSO-7

Np

E

W

1534 UT

Sp

FE XV
284A

COUNT = 108777
ROLL = 32.9°
P-TH = -7.03

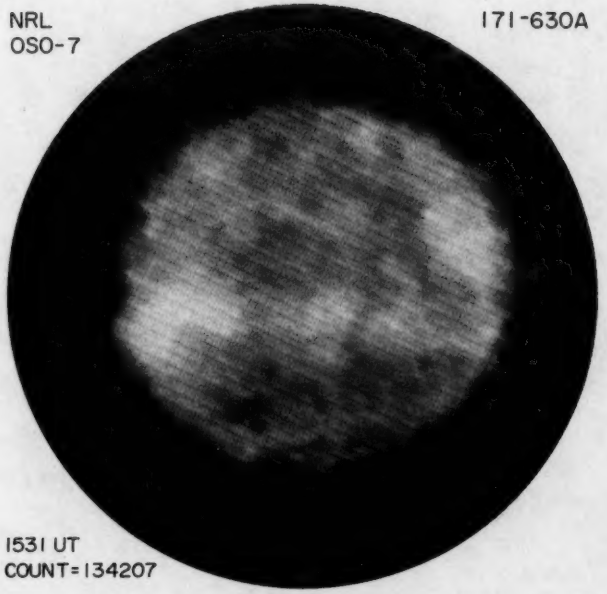
Np

NRL
OSO-7

171-630A

E

W



1531 UT
COUNT=134207

Sp

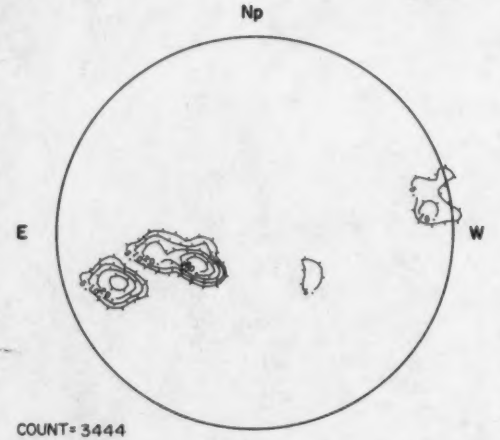
65
Jun 73

JUNE 22, 1973 (P = -6.81, B_o = 1.88, L_o = 91.66)

66 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3444
ROLL = 31.0°
P-TH = -7.00

1429 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

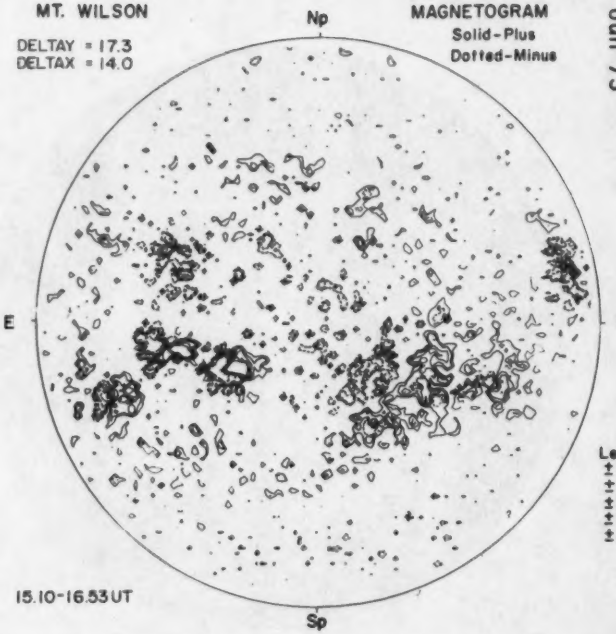
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

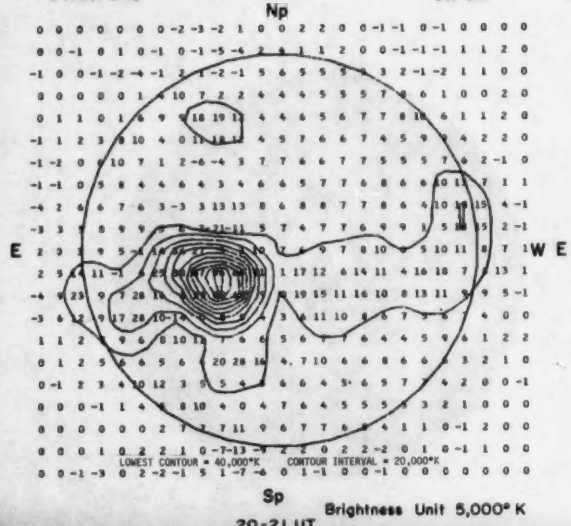


Levels
±5
±10
±20
±40
±80

15.10-16.53 UT

STANFORD

9.1 cm



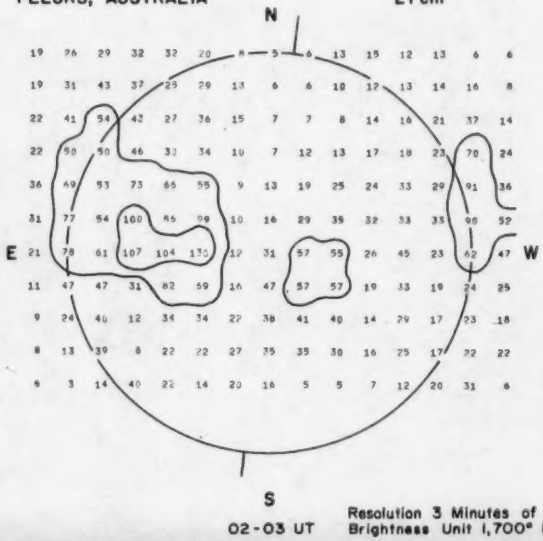
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

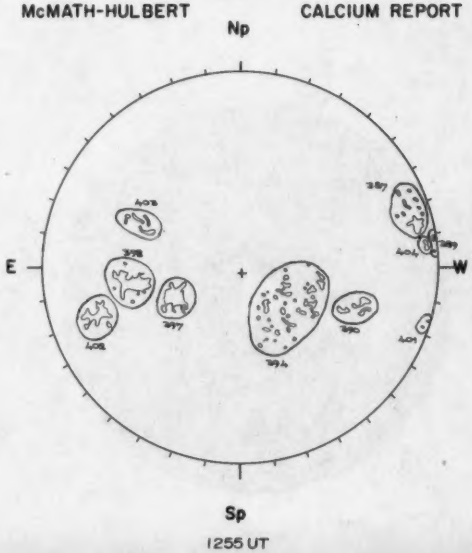


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT

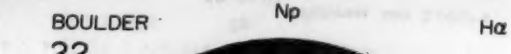


GOOD	S
87 - 2200	- 3.0
94 - 2000	- 2.5
97 - 2400	- 4.0
98 - 2000	- 3.5
02 - 1600	- 3.5
04 - 0400	- 2.5

1255 UT

BOULDER

22



Hα

BOULDER

SUNSPOTS

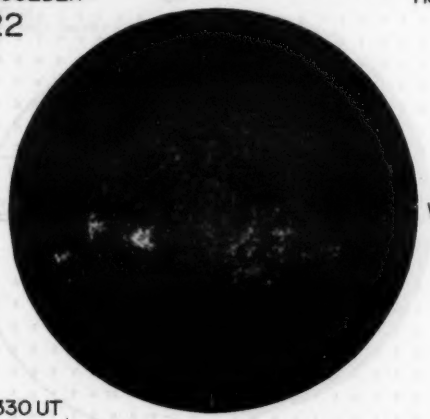
NRL

WHITE-LIGHT

BOULDER
22

Np

Hα



E W

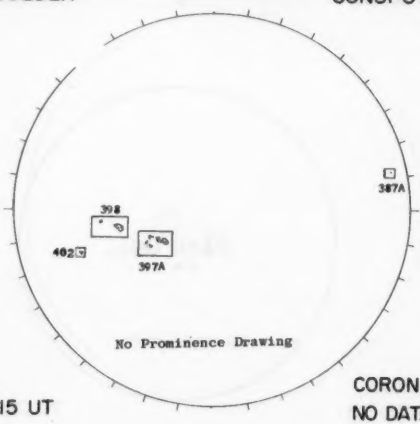
Sp

1330 UT

BOULDER

Np

SUNSPOTS



E W

CORONA
NO DATA

1615 UT

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E W

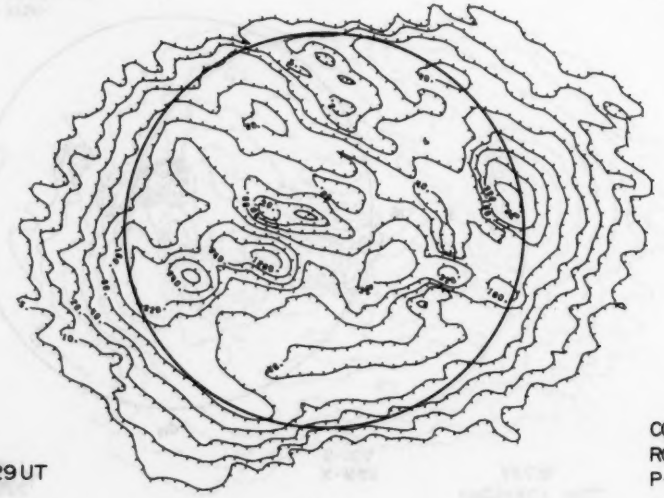
1602-2053 UT

Sp

NASA GSFC
OSO-7

Np

FE XV
284A



E W

COUNT = 110885
ROLL = 31.0°
P-TH = -7.00

1429 UT

Sp

Np

NRL
OSO-7

171-630A

E W

1425 UT
COUNT = 154087

Sp

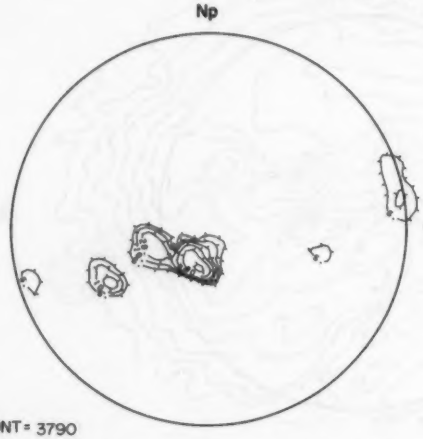
67
Jun 73

JUNE 23, 1973 (P = - 6.37, B_o = 1.99, L_o = 78.42)

68 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3790
ROLL = 29.0°
P-TH = -6.96

1459 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

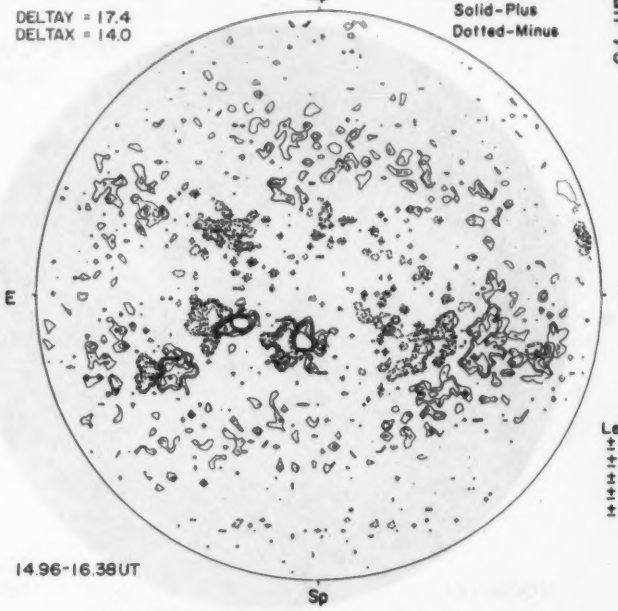
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

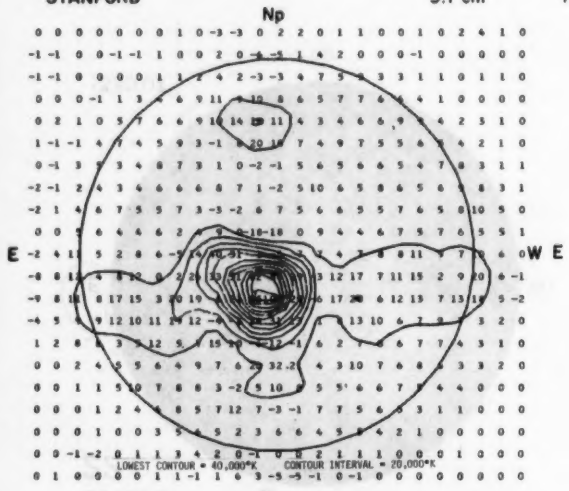


Levels
± 5
± 10
± 20
± 40
± 80

14.96-16.38 UT

STANFORD

9.1 cm



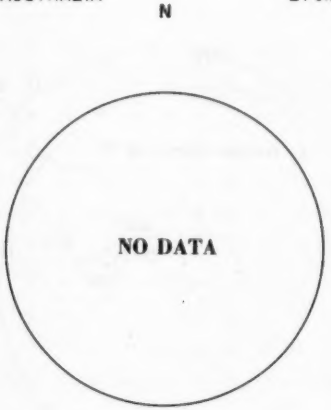
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

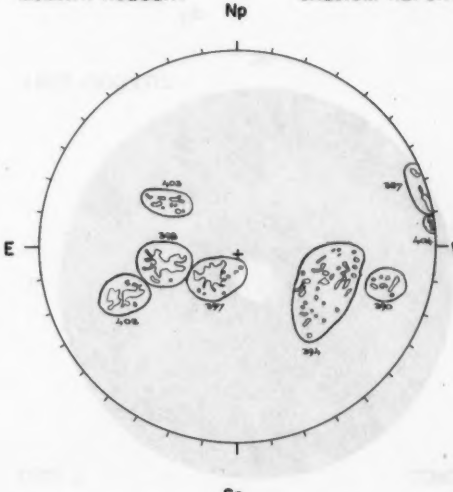


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

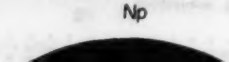
CALCIUM REPORT



GOOD	S
87 - 1600	- 3.0
97 - 2400	- 4.0
98 - 2000	- 3.5
02 - 1800	- 3.5

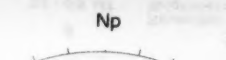
1200 UT

BOULDER
23



Hα

BOULDER



SUNSPOTS

NRL

WHITE-LIGHT

20-21 UT

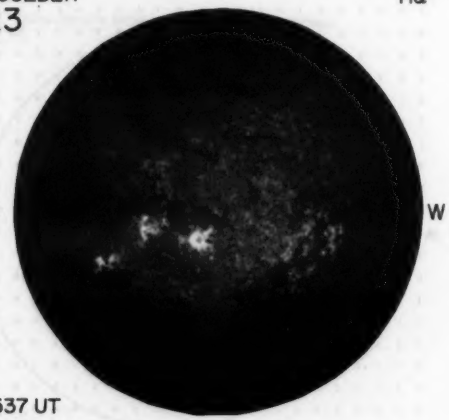
BOULDER
23

Np

Hα

E

W



1537 UT

Sp

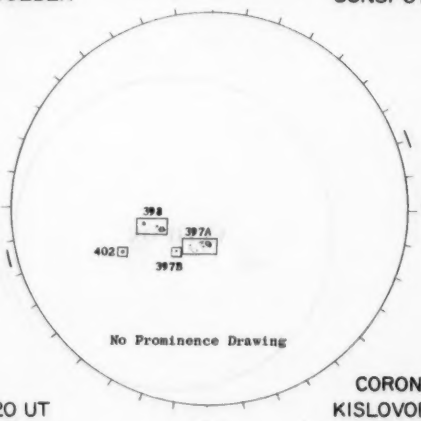
BOULDER

Np

SUNSPOTS

E

W



No Prominence Drawing

1820 UT

CORONA
KISLOVODSK

Sp

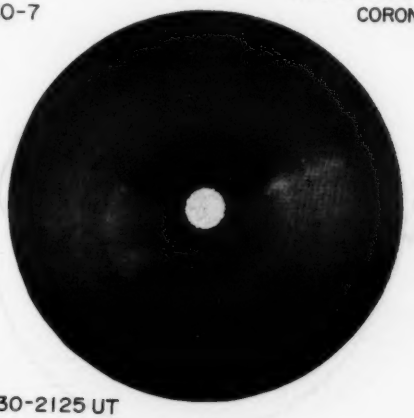
NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W



1630-2125 UT

Sp

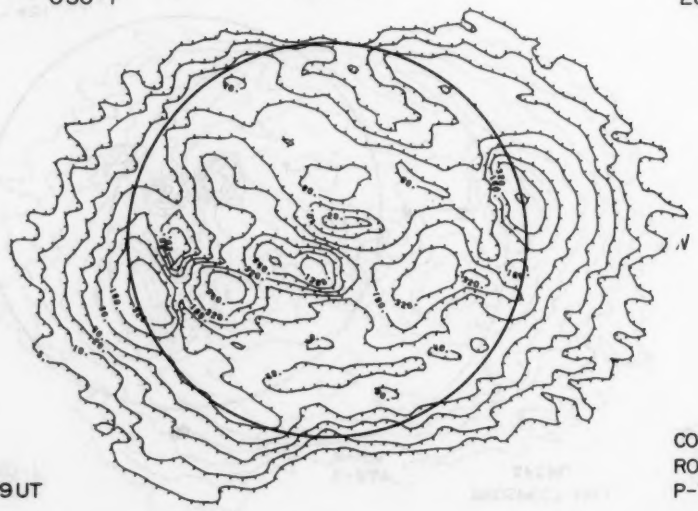
NASA GSFC
OSO-7

Np

FE XV
284A

E

W



1459 UT

Sp

COUNT = 113358
ROLL = 29.0°
P-TH = -6.96

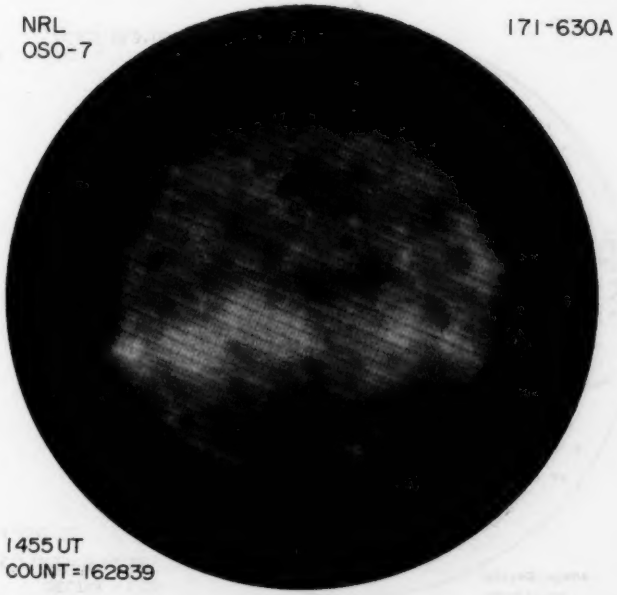
Np

NRL
OSO-7

171-630A

E

W



1455 UT
COUNT=162839

Sp

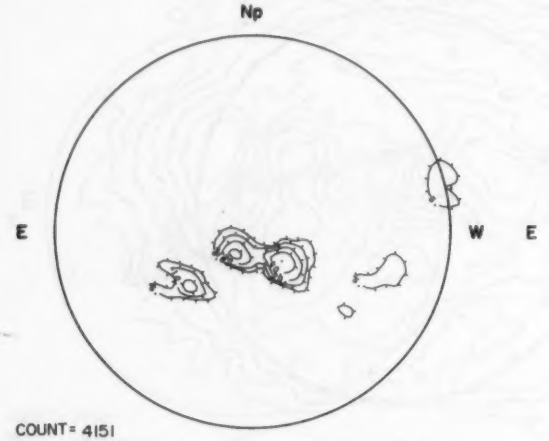
69
Jun 73

JUNE 24, 1973 (P = -5.92, B_o = 2.11, L_o = 65.18)

70
Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4151
ROLL = 28.1°
P-TH = -6.93

1530 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

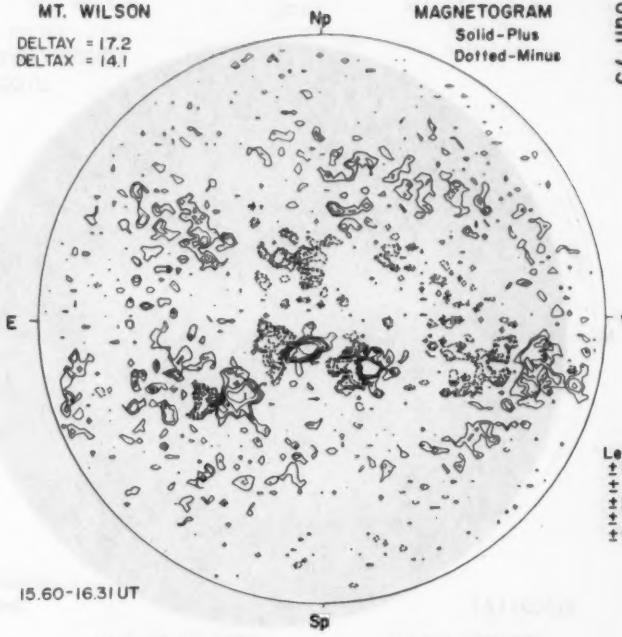
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.2
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

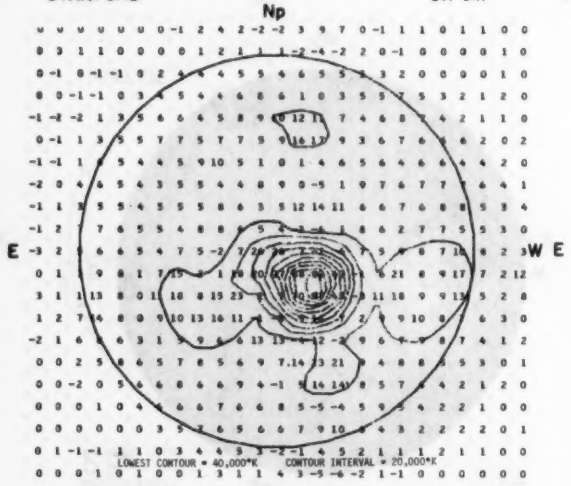


Levels
±5
±10
±20
±40
±80

15.60-16.31 UT

STANFORD

9.1 cm



LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

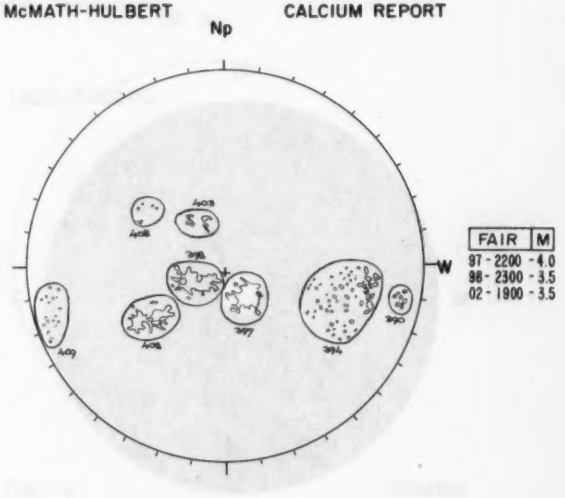
21 cm

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT

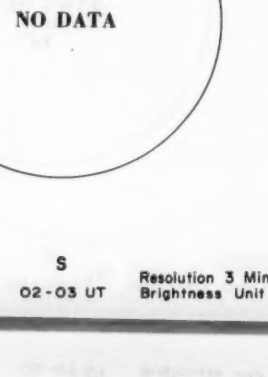


FAIR	M
97 - 2200	- 4.0
98 - 2300	- 3.5
02 - 1900	- 3.5

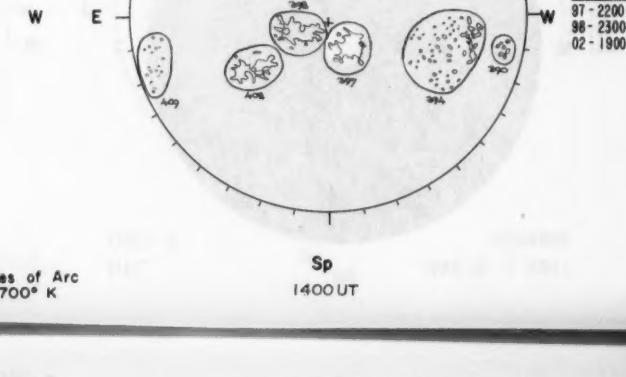
1400 UT

BOULDER

BOULDER



SUNSPOTS



Sp

20-21 UT

Brightness Unit 5,000° K

02-03 UT

Resolution 3 Minutes of Arc

Brightness Unit 1,700° K

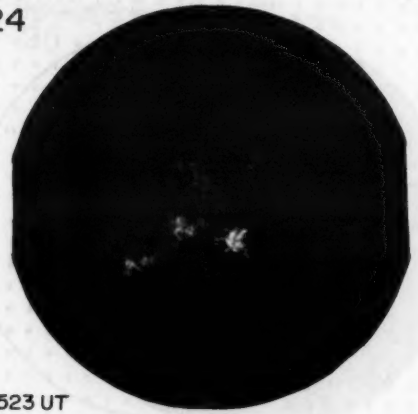
1400 UT

BOULDER

24

Np

Hα



E

W

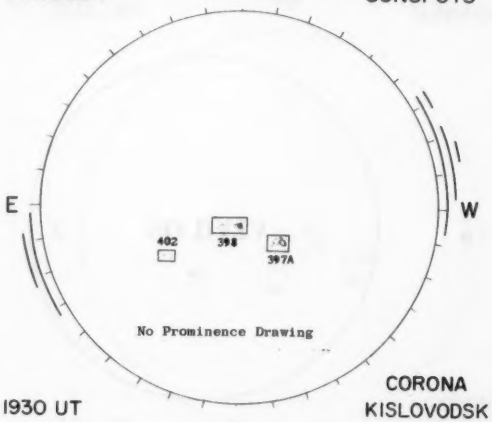
1523 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1930 UT

Sp

CORONA

KISLOVODSK

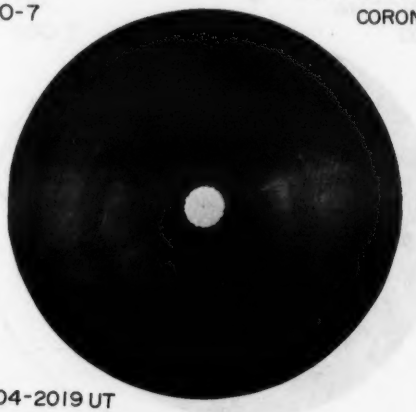
NRL

OSO-7

Np

WHITE-LIGHT

CORONA



E

W

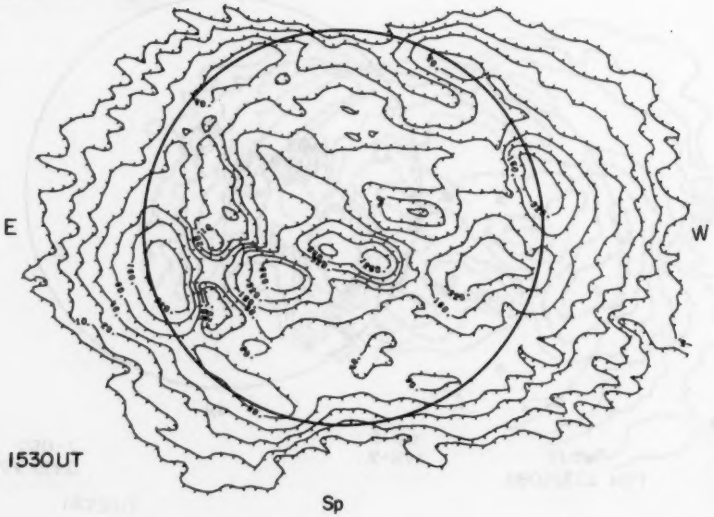
1704-2019 UT

Sp

NASA GSFC

OSO-7

Np



E

W

1530 UT

Sp

FE XV

284A

COUNT = 115582

ROLL = 28.1°

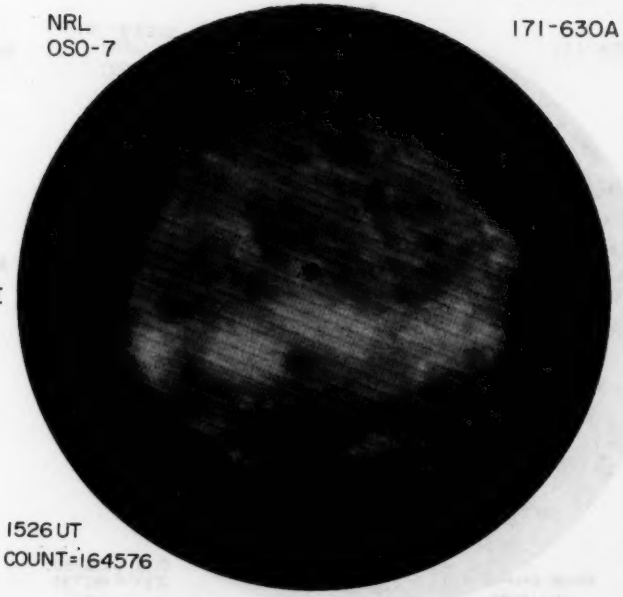
P-TH = -6.93

Np

NRL

OSO-7

171-630A



E

W

1526 UT

COUNT=164576

Sp

71

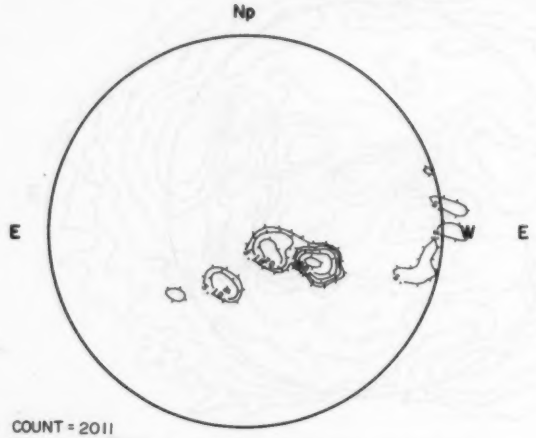
Jun 73

JUNE 25, 1973 (P = -5.47, B_o = 2.22, L_o = 51.95)

72 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 2011
ROLL = 28.4°
P-TH = -6.89

1515 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

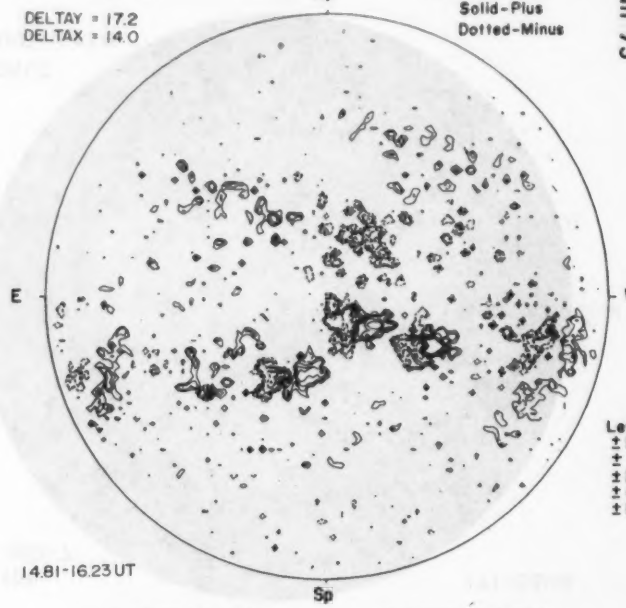
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.2
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

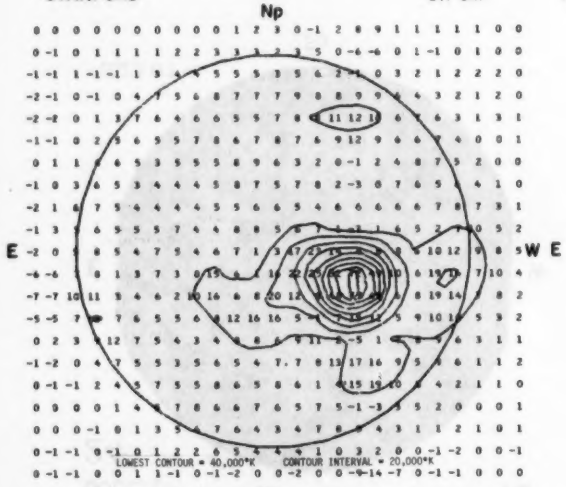


Levels
±5
±10
±20
±40
±80

14.81-16.23 UT

STANFORD

9.1 cm



LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

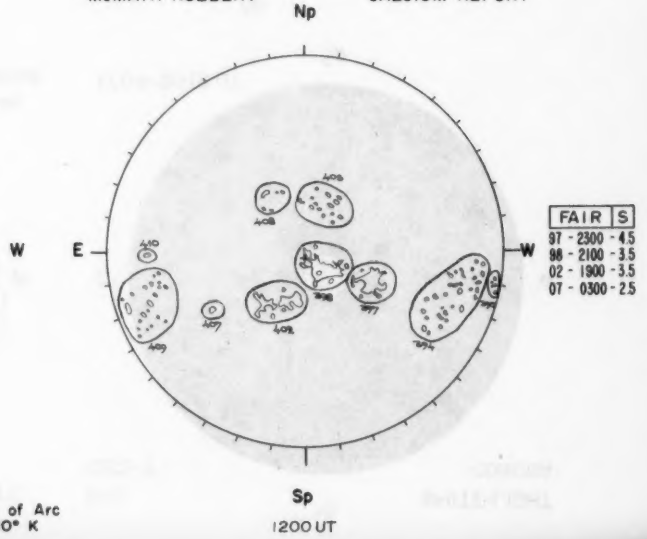
21 cm

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



1200 UT

BOULDER

Hα

BOULDER

SUNSPOTS

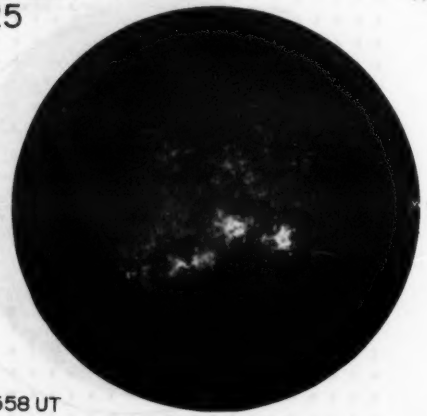
20-21 UT

02-03 UT Brightness Unit 1,700 K

BOULDER
25

Np

Hα



E

W

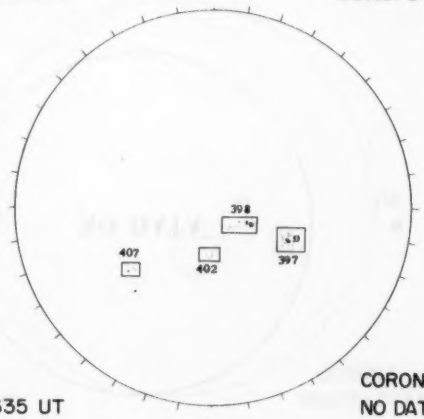
1558 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

CORONA
NO DATA

1635 UT

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

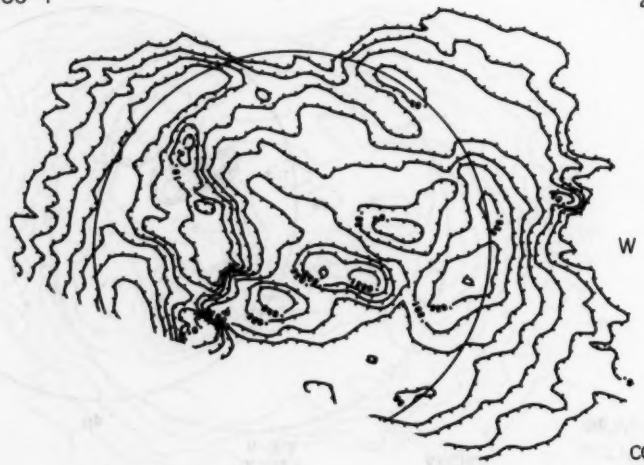
1558-2049 UT

Sp

NASA GSFC
OSO-7

Np

FE XV
284A



E

W

COUNT = 96172
ROLL = 28.4°
P-TH = -6.89

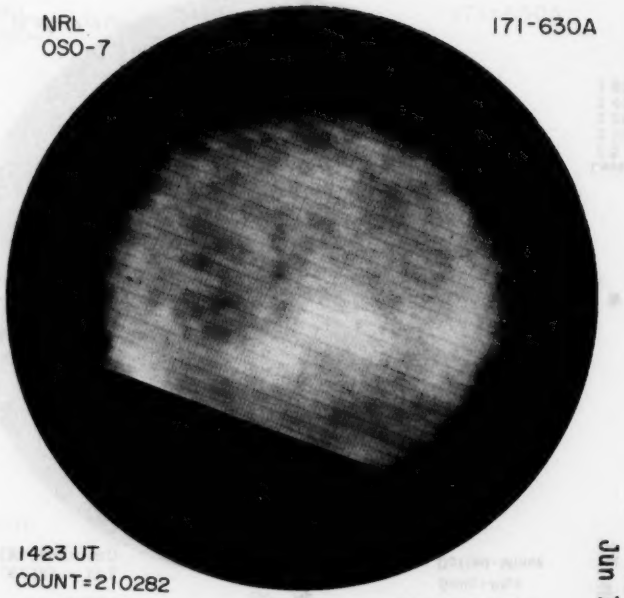
1423 UT

Sp

Np

NRL
OSO-7

171-630A



1423 UT
COUNT=210282

Sp

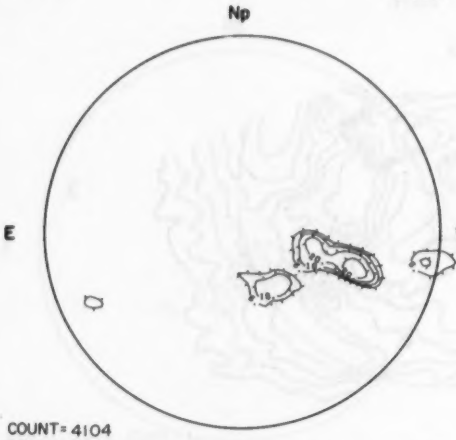
73
Jun 73

JUNE 26, 1973 (P = -5.02, B_o = 2.34, L_o = 38.71)

74 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4104
ROLL = 28.9°
P-TH = -6.85

1454 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

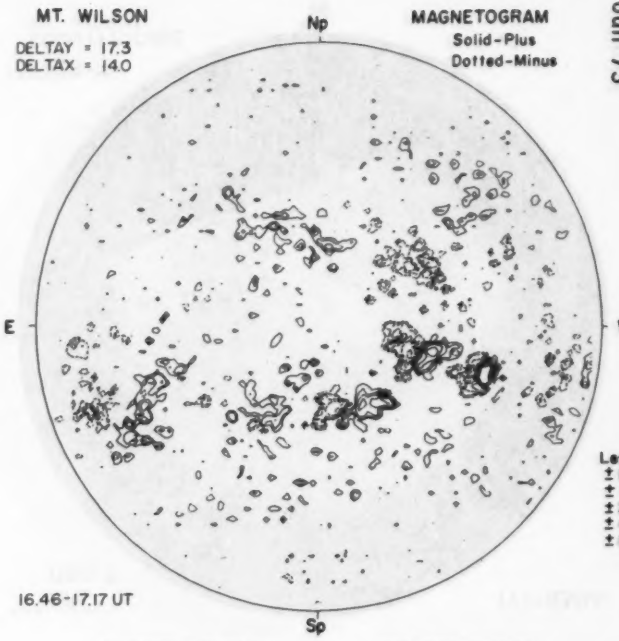
Contours in Intervals of 200° K

1

MT. WILSON

DELTAY = 17.3
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

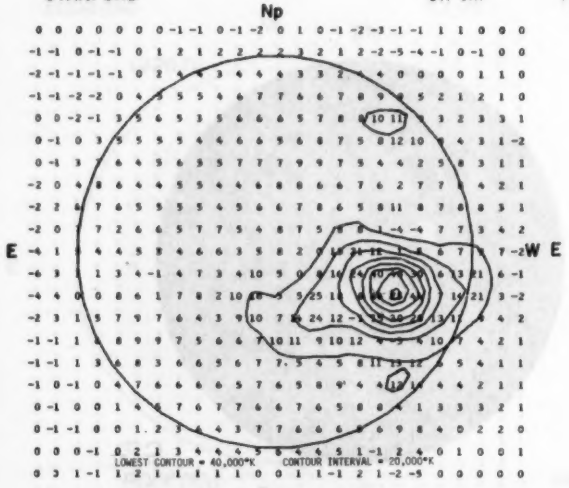


Levels
±5
±10
±20
±40
±80

16.46-17.17 UT

STANFORD

9.1 cm



LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

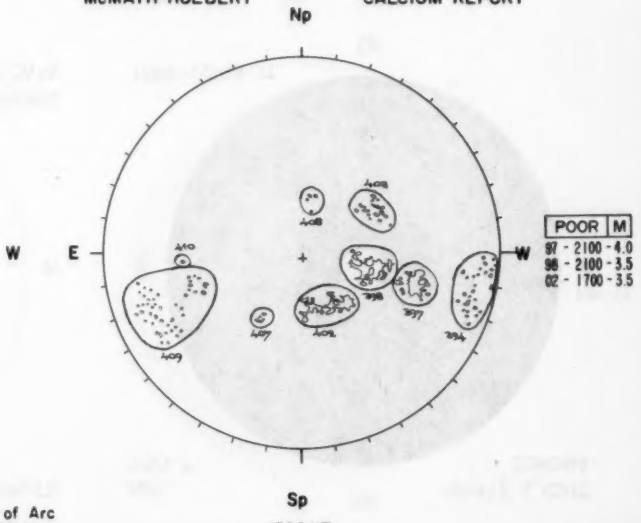
21 cm

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT

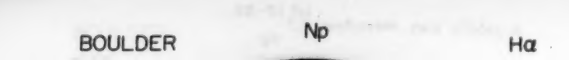


1500 UT

BOULDER

Np

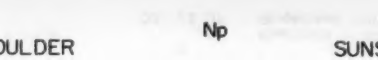
Hα



BOULDER

Np

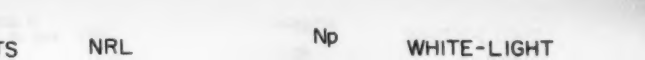
SUNSPOTS



NRL

Np

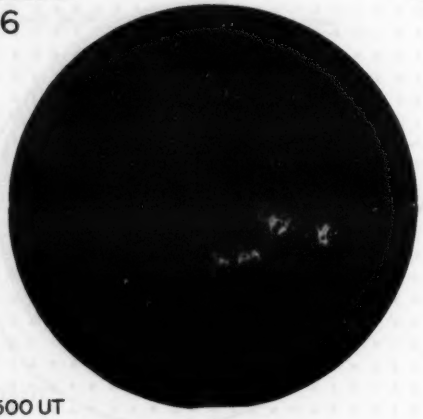
WHITE-LIGHT



BOULDER
26

Np

Hα



E

W

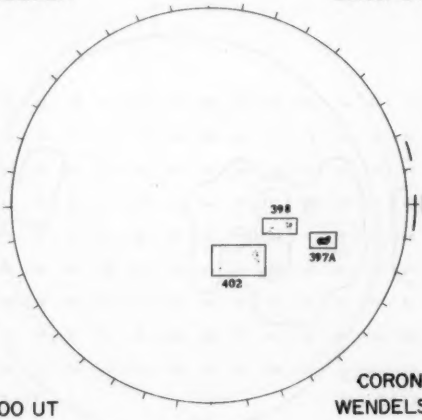
1500 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1500 UT

CORONA
WENDELSTEIN

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

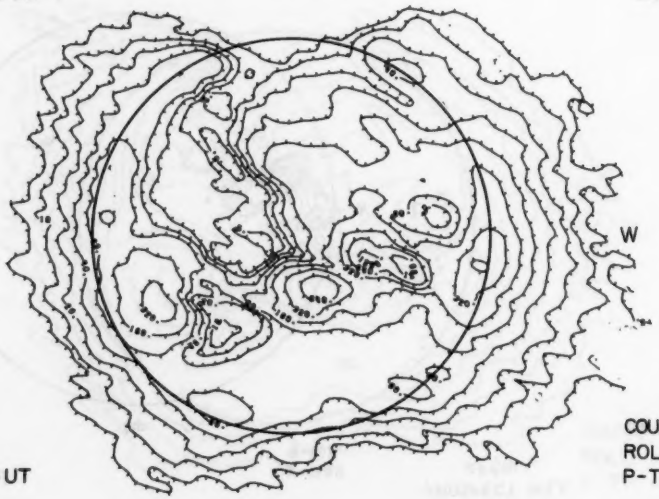
1628-2120 UT

Sp

NASA GSFC
OSO-7

Np

FE XV
284A



E

W

COUNT = 100467
ROLL = 28.9°
P-TH = -6.85

1454 UT

Np

NRL
OSO-7

171-630A

E

W

1450 UT
COUNT=161562

Sp

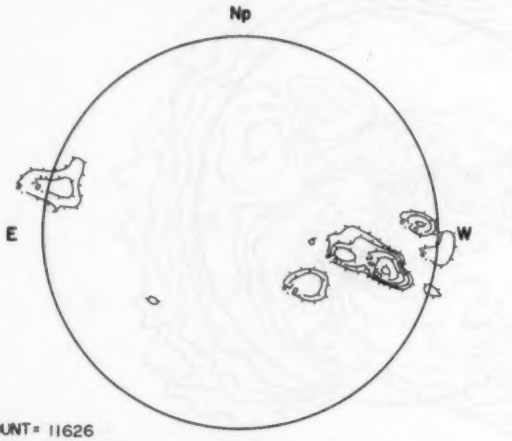
75
Jun 73

JUNE 27, 1973 (P = -4.57, B_o = 2.45, L_o = 25.47)

76
Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 11626
ROLL = 29.2°
P-TH = -6.81

1348 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

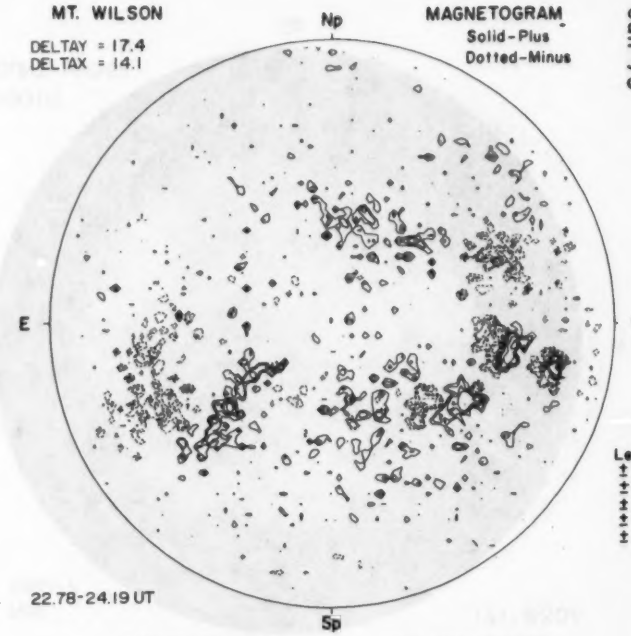
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

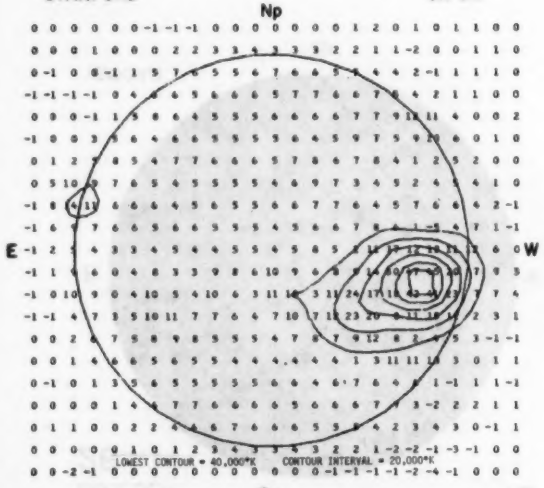


Levels
±5
±10
±20
±40
±80

22.78-24.19 UT

STANFORD

9.1 cm

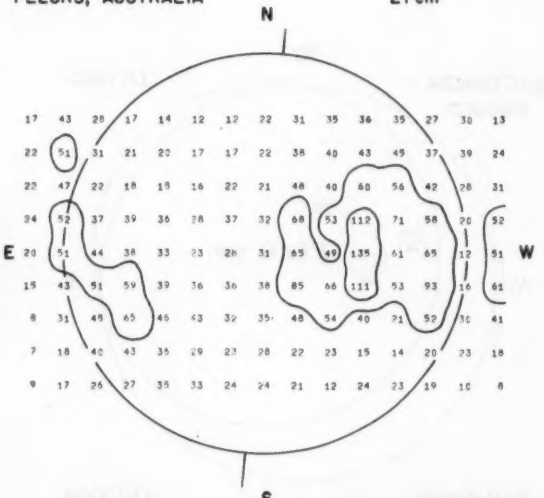


Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

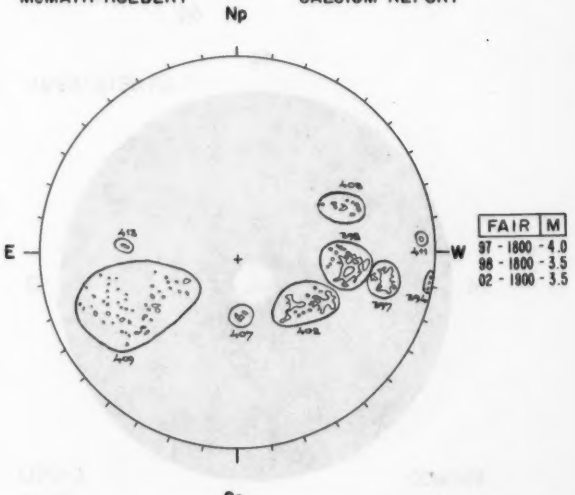


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



1730 UT

BOULDER

27

Np

Hα

BOULDER

Np

SUNSPOTS

NRL

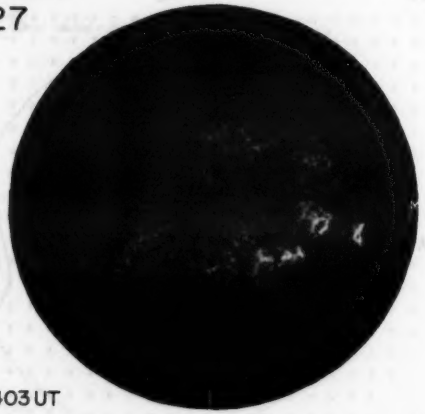
Np

WHITE-LIGHT

BOULDER
27

Np

Hα

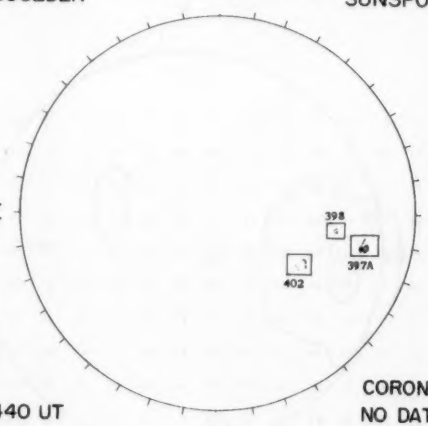


1403 UT

BOULDER

Np

SUNSPOTS



1440 UT

CORONA
NO DATA

NRL
OSO-7

Np

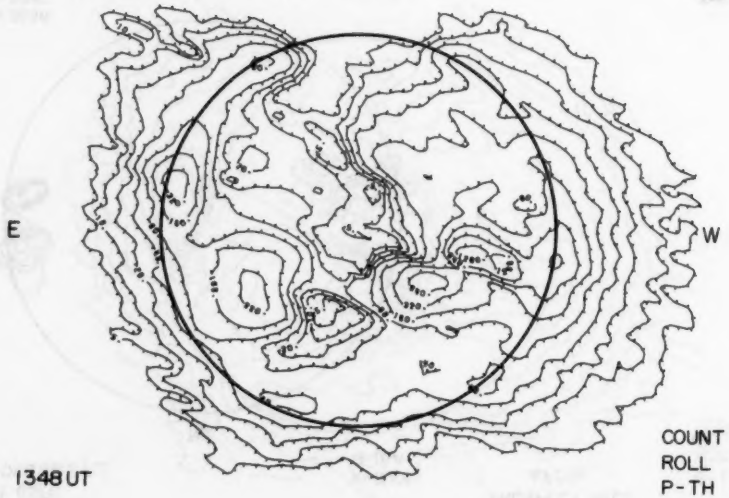
WHITE-LIGHT
CORONA

1522-2013 UT

NASA GSFC
OSO-7

Np

FE XV
284A



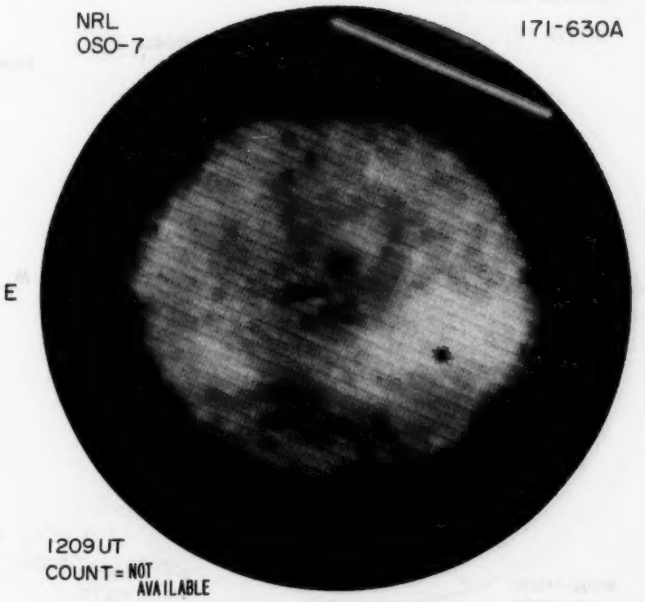
1348 UT

COUNT = 97663
ROLL = 29.2°
P-TH = -6.81

Np

NRL
OSO-7

171-630A



1209 UT
COUNT = NOT AVAILABLE

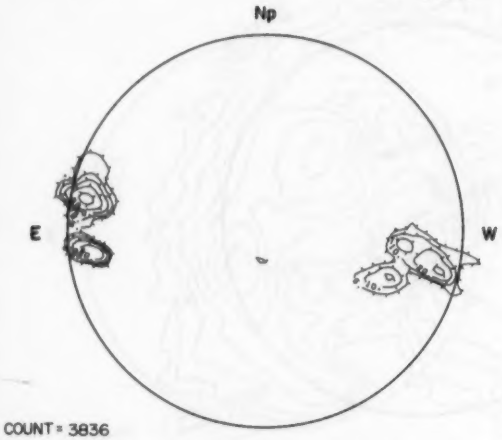
77
Jun 73

JUNE 28, 1973 (P = -4.12, B_o = 2.56, L_o = 12.24)

78
Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 3836
ROLL = 29.5°
P-TH = -6.77

1242 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

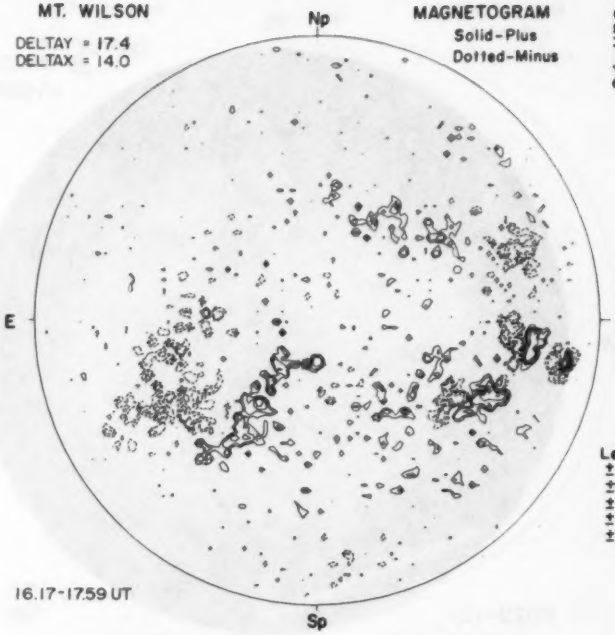
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

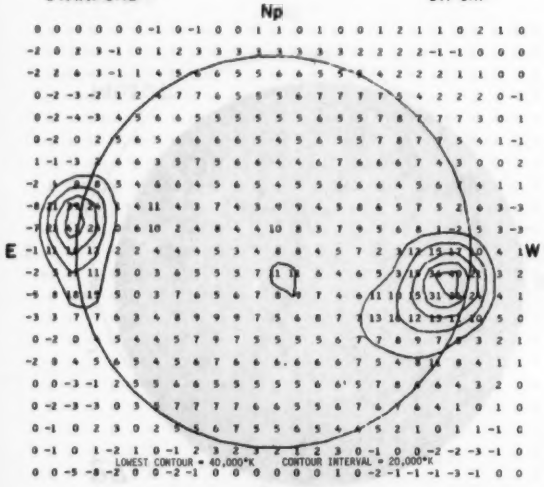


Levels
±5
±10
±20
±40
±80

16.17-17.59 UT

STANFORD

9.1 cm



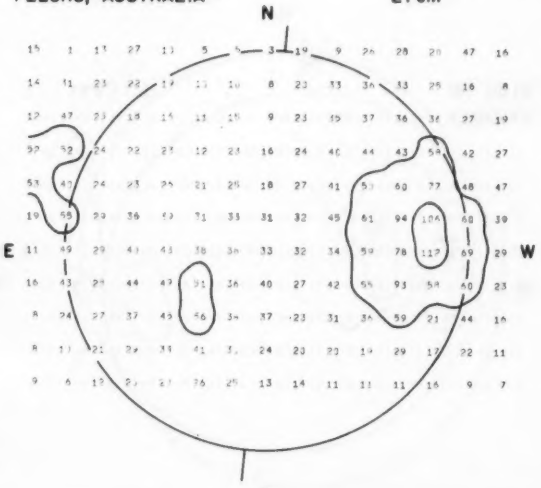
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

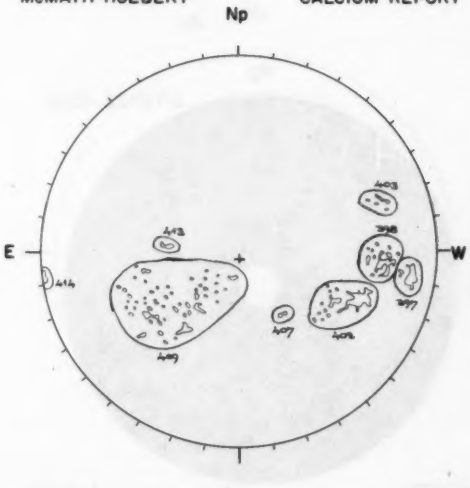


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



FAIR	M
97 - 1800	- 4.0
98 - 1800	- 3.0
02 - 2200	- 3.0
14 - 0800	- 3.0

1500 UT

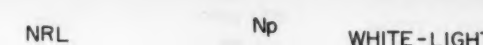
BOULDER

Hα

BOULDER

SUNSPOTS

NRL

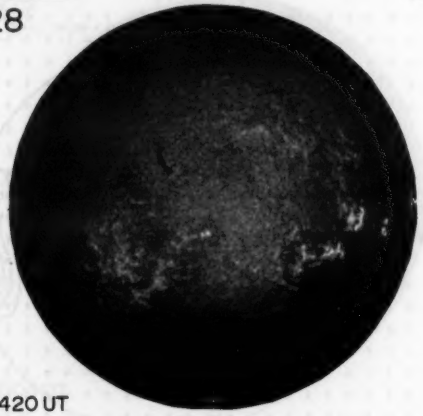


WHITE-LIGHT

BOULDER
28

Np

Hα



E W

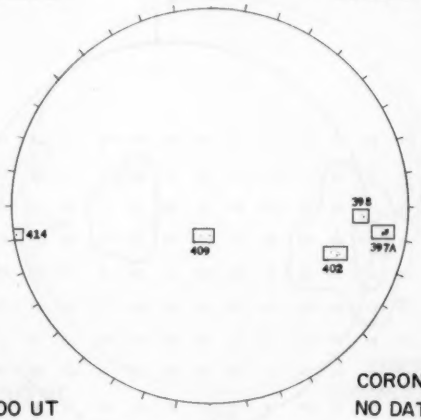
1420 UT

Sp

BOULDER

Np

SUNSPOTS



E W

CORONA
NO DATA

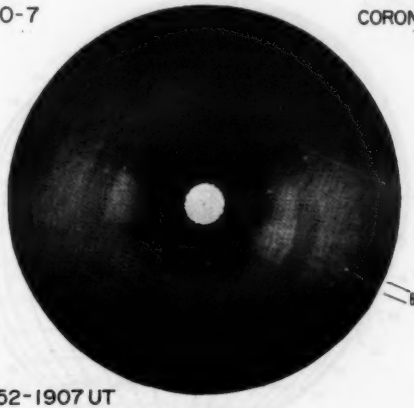
1500 UT

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



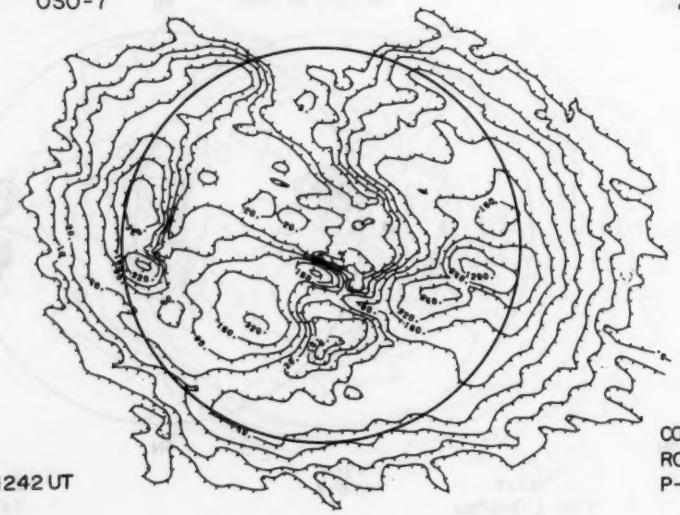
E W

1452-1907 UT

Sp

NASA GSFC
OSO-7

Np



E W

1242 UT

Sp

FE XV
284A

COUNT = 91515
ROLL = 29.5°
P-TH = -6.77

Np

NRL
OSO-7

171-630A

E W

1239 UT
COUNT=147745

Sp

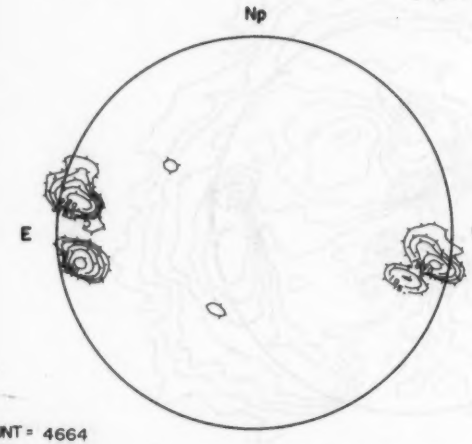
79
Jun 73

JUNE 29, 1973 (P = -3.67, B_o = 2.68, L_o = 359.00)

80
Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT = 4664
ROLL = 29.7°
P-TH = -6.73

1313 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

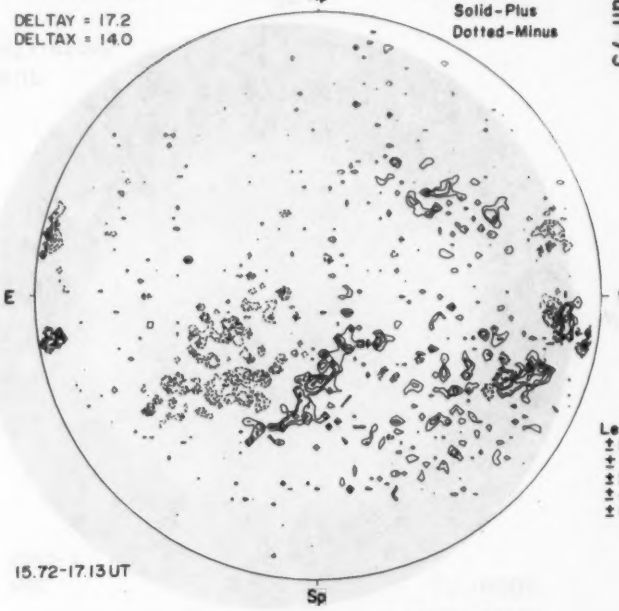
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.2
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

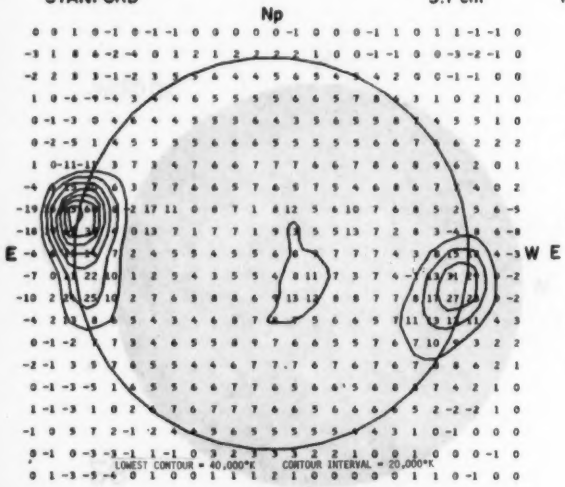


Levels
±5
±10
±20
±40
±80

15.72-17.13 UT

STANFORD

9.1 cm



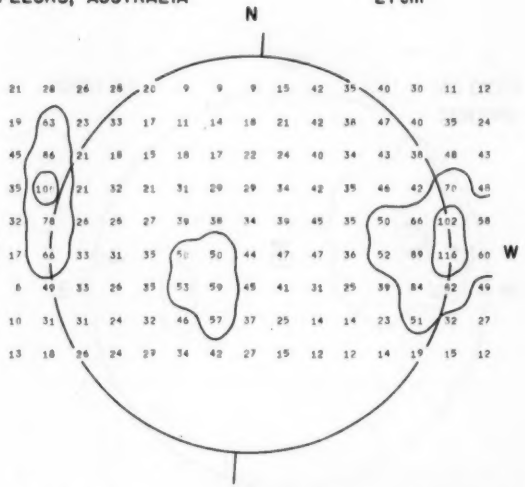
LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

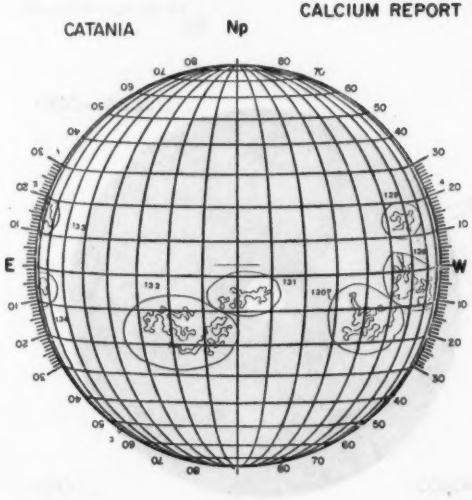


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

CALCIUM REPORT

CATANIA



	FAIR	GD
28	4632	---
30	4359	---
32	4378	---
33	3458	---
34	1787	---

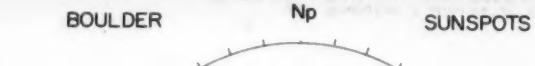
0628 UT

BOULDER
29

Hα

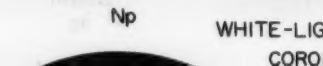
BOULDER

SUNSPOTS



NRL
OSO-7

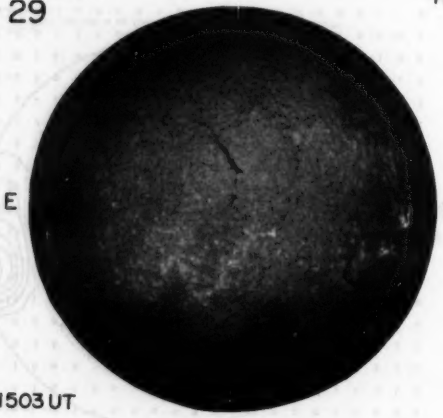
WHITE-LIGHT
CORONA



BOULDER
29

Np

Hα



E

W

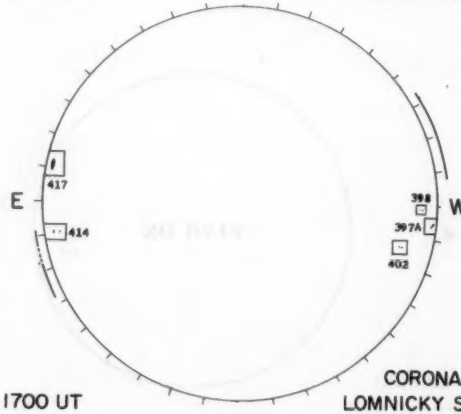
1503 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1700 UT

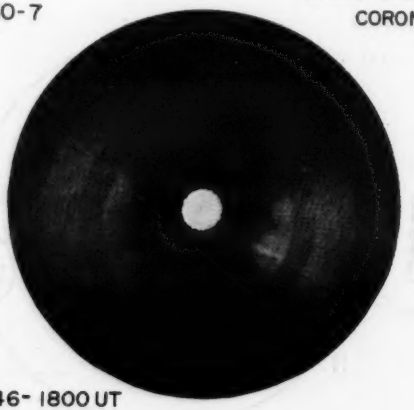
CORONA
LOMNICKY STIT

Sp

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



E

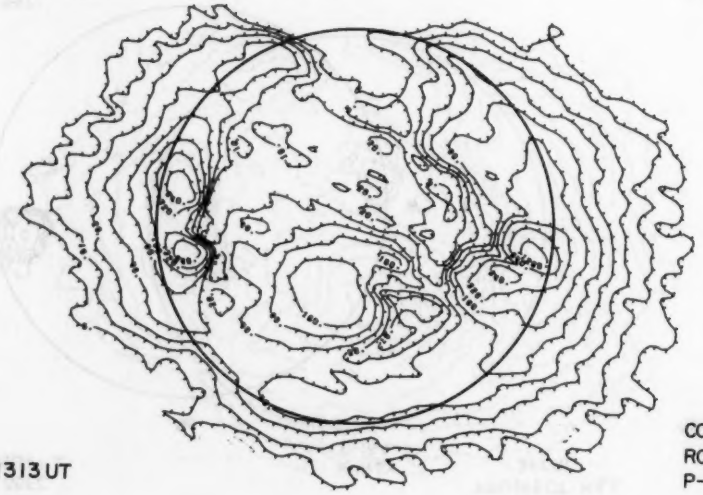
W

1446-1800 UT

Sp

NASA GSFC
OSO-7

Np



W

1313 UT

Sp

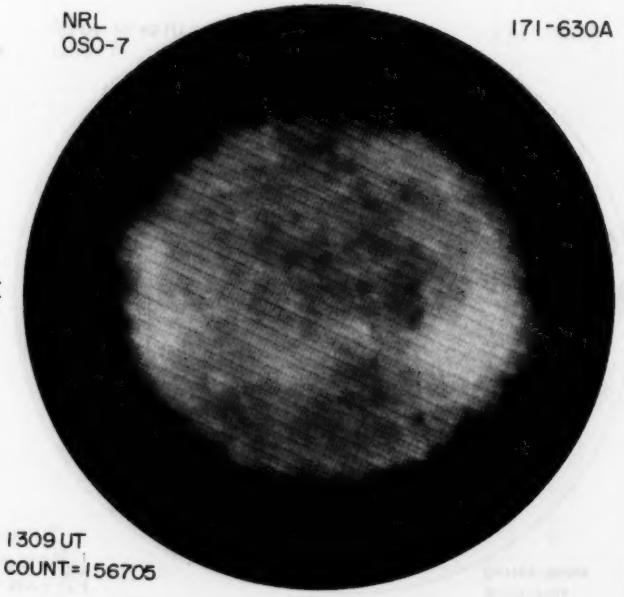
FE XV
284A

COUNT = 88949
ROLL = 29.7°
P-TH = -6.73

Np

NRL
OSO-7

171-630A



E

W

1309 UT
COUNT=156705

Sp

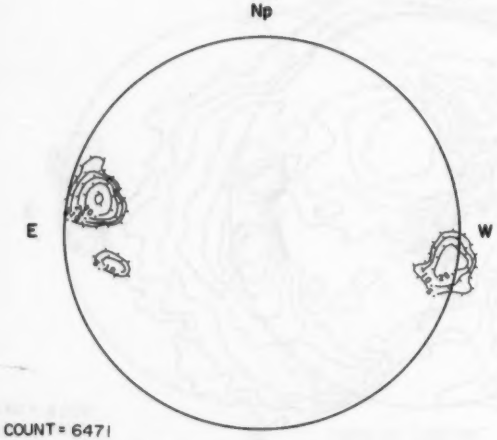
81
Jun 73

JUNE 30, 1973 (P=- 3.21, B_o= 2.79, L_o= 345.77)

82 Jun 73

NASA GSFC
OSO-7

X-RAY
8-16A



COUNT= 6471
ROLL = 29.6°
P-TH = -6.67

1835 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

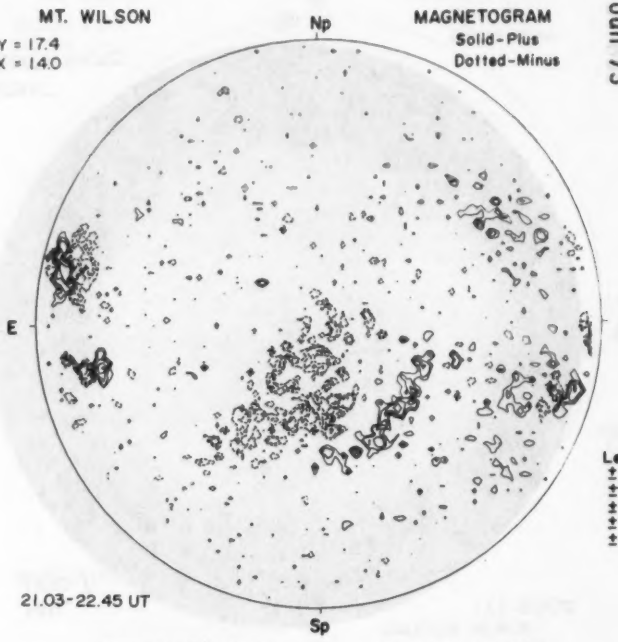
8.6 mm

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

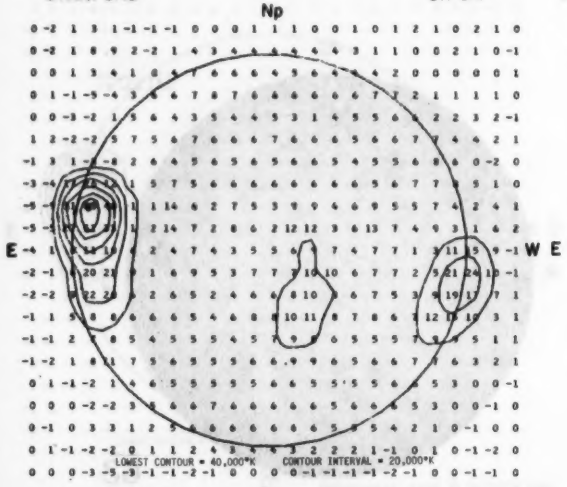


Levels
±5
±10
±20
±40
±80

21.03-22.45 UT

STANFORD

9.1 cm



LOWEST CONTOUR = 40,000°K CONTOUR INTERVAL = 20,000°K

Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

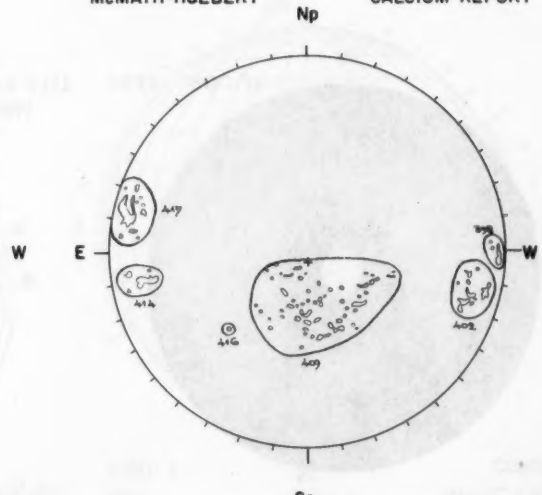
21 cm

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

McMATH-HULBERT

CALCIUM REPORT



GOOD	S
98 - 1500	- 3.0
02 - 2000	- 2.5
14 - 1400	- 2.5
17 - 3500	- 3.5

1630 UT

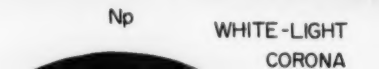
BOULDER
30

Hα

BOULDER

SUNSPOTS

NRL
OSO-7

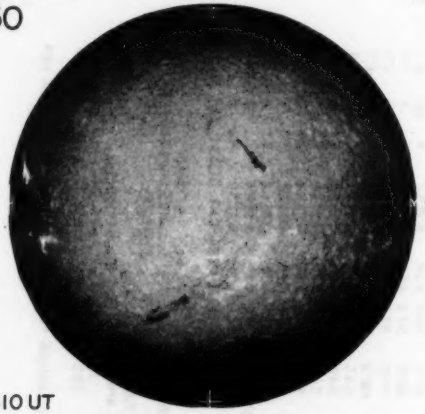


WHITE-LIGHT
CORONA

BOULDER
30

Np

Hα



E

W

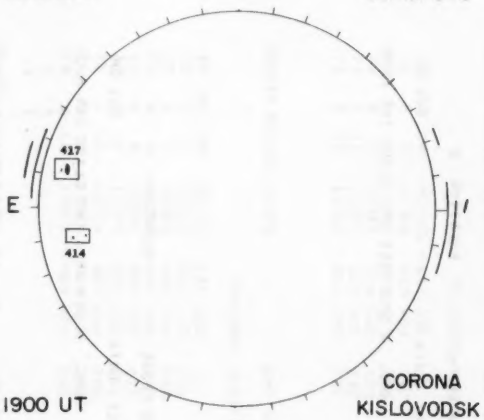
Sp

1610 UT

BOULDER

Np

SUNSPOTS



E

Sp

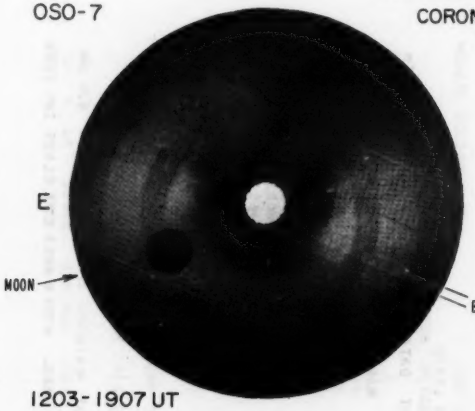
1900 UT

CORONA
KISLOVODSK

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



E

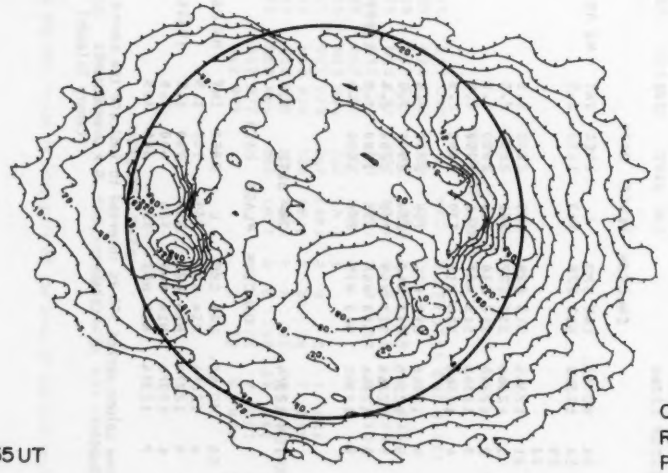
W

Sp

1203-1907 UT

NASA GSFC
OSO-7

Np



E

W

1835 UT

FE XV
284A

COUNT = 69693
ROLL = 29.6°
P-TH = -6.67

Np

NRL
OSO-7

171-630A

E

W

1832 UT
COUNT NOT AVAILABLE

Sp

83
Jun 73

REGIONS OF SOLAR ACTIVITY

JUNE 1973

HCMATH REGION 12363 CMP DATE 1.1 RETURN OF REGION 12332 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	5	26	12363	S10 E89	353	400	1.0										7	2
73	5	27															7	2
73	5	28	12363	S12 E50	7	700	1.5											
73	5	31	12363	S13 E09	8	1300	1.5											
73	6	1	12363	S11 W06	8	1200	1.0											
73	6	2	12363	S10 W16	6	1200	1.5	19194	S15 W16	0	(BF)	2					4	1
73	6	3	12363	S10 W32	5	1500	3.0	19194	S14 W25	1	(BP)	2	B	10	7	BXO	6	2
73	6	4	12363	S10 W41	5	1500	2.5	19194	S14 W38	1	(AP)	1	M	20	5	BXO	4	1
73	6	5	12363	S12 W56	6	900	2.5										4	1
73	6	6	12363	S13 W70	1	300	1.0										7	2
73	6	7	12363	S13 W76	0	300	1.0										8	2

HCMATH REGION 12372 CMP DATE 1.5

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	3	12372	N17 W30	3	200	1.5											
73	6	4	12372	N17 W38	2	300	1.5											

HCMATH REGION 12362 CMP DATE 2.2 RETURN OF REGION 12346 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	5	26	12362	N09 E69	353	400	1.0											
73	5	28	12362	N09 E64	354	600	2.0											
73	5	31	12362	N09 E23	355	600	2.0											
73	6	1	12362	N10 E08	355	400	2.0											
73	6	2	12362	N10 W09	359	500	2.5											
73	6	3	12362	N09 W23	356	500	2.5											
73	6	4	12362	N09 W32	356	500	2.0											
73	6	5	12362	N11 W47	357	300	2.0											
73	6	6	12362	N11 W64	355	300	1.0											
73	6	7	12362	N11 W70	354	300	1.0											

HCMATH REGION 12366 CMP DATE 3.3 RETURN OF REGION 12336 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	5	28	12366	S12 E75	343	1100	1.5										9	3
73	5	29															7	2
73	5	30															7	2
73	5	31	12366	S13 E39	339	2800	2.0											
73	6	1	12366	S13 E22	341	2800	2.0		S15 E12				B	10	1	AXX	6	2
73	6	2	12366	S13 E10	340	2800	3.0										6	2
73	6	3	12366	S13 W07	340	3000	2.5		S17 E19				B	0	2	AXX	6	2
73	6	4	12366	S13 W15	339	3000	2.5		S17 E15				M	0	1	AXX	5	1
73	6								S14 E30				M	10	1	AXX		
73	6	5	12366	S13 W25	335	2700	2.5										5	2
73	6	6	12366	S13 W43	334	2500	2.5											
73	6	7	12366	S13 W49	333	2200	2.5											
73	6	8	12366	S13 W62	333	1400	2.0	19201	S13 W64	333	(A)	1	B	10	1	AXX	7	2
73	6	9	12366	S13 W75	332	1000	1.5										5	2

HCMATH REGION 12374 CMP DATE 3.3

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	4	12374	N14 W15	339	100	1.5											
73	6	5	12374	N14 W27	337	200	1.5	19196	N13 W31	338	(BF)	1	B	10	5	BXO		
73	6	6	12374	N14 W45	336	400	1.5											
73	6	7	12374	N14 W53	337	300	1.5											

The new column marked STA is inserted to indicate the source of data for sunspot area, count and classification.
B = Boulder C = Carnarvon G = Gran Canaria (Canary Islands) M = Manila

REGIONS OF SOLAR ACTIVITY

JUNE 1973

MCMATH REGION 12368 CMP DATE 4.4 RETURN OF REGION 12336* ROTATION 3

CALCIUM PLAGE DATA — SUNSPOT DATA — 9.1 CM

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	5	31	12368	S01 E51	327	800	1.0											
73	6	1	12368	S02 E38	325	600	1.0											
73	6	2	12368	S03 E24	326	400	1.5											
73	6	3	12368	S04 E08	325	500	2.0										2	1
73	6	4	12368	S04 W02	326	500	1.5											
73	6	5	12368	S04 W16	326	700	1.5											
73	6	6	12368	S05 W35	326	700	1.5											
73	6	7	12368	S05 W42	326	500	1.5											
73	6	8	12368	S05 W66	337	200	1.0											
73	6	9	12368	S04 W76	333	200	1.0											

MCMATH REGION 12388 CMP DATE 5.3

CALCIUM PLAGE DATA — SUNSPOT DATA — 9.1 CM

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	10	12388	S18 W68	313	400	1.5										4	1
73	6	11	12388	S18 W81	312	400	1.0											

MCMATH REGION 12381 CMP DATE 7.3

CALCIUM PLAGE DATA — SUNSPOT DATA — 9.1 CM

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	7	12381	N13 W03	287	100	2.0	19200	N13 W06	288	(BP)	2	B	0	2	BXO		
73	6	8	12381	N14 W19	290	200	3.0											
73	6	9	12381	N14 W32	289	300	2.5											
73	6	10	12381	N14 W45	290	300	1.5											
73	6	11	12381	N14 W59	290	200	1.0											

MCMATH REGION 12378 CMP DATE 8.2

CALCIUM PLAGE DATA — SUNSPOT DATA — 9.1 CM

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	6	12378	N07 E15	276	800	3.0	19197	N05 E16	279	(BP)	2	B	0	4	BXO		
73	6	7	12378	N07 E09	275	700	3.5	19197	N05 E02	280	(BP)	3	B	0	6	BXO		
73	6	8	12378	N07 W06	277	600	2.5	19197	N05 W11	280	B							
73	6	9	12378	N07 W20	277	600	2.0											
73	6	10	12378	N07 W36	281	400	3.0											
73	6	11	12378	N07 W49	280	300	2.0											
73	6	12	12378	N08 W62	280	200	1.5											
73	6	13	12378	N08 W77	282	200	1.0											

MCMATH REGION 12375 CMP DATE 9.1

CALCIUM PLAGE DATA — SUNSPOT DATA — 9.1 CM

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	4	12375	N14 E65	259	300	1.0	19195	N13 E61	262	AP						3	1
73	6	5	12375	N14 E52	258	600	3.0	19195	N12 E45	262	(BF)	2	B	10	4	BXO	3	1
73	6	6	12375	N14 E32	259	800	3.0	19195	N13 E33	262	(BF)	2	B	0	4	BXO		
73	6	7	12375	N14 E23	261	600	3.0	19195	N12 E19	263	(BP)	2	B	10	6	BXO		
73	6	8	12375	N13 E08	263	400	2.5	19195	N12 E07	262	(BP)	2						
73	6	9	12375	N13 W06	263	500	2.5	19195	N13 W04	260	(B)	1					4	1
73	6	10	12375	N13 W18	263	700	3.0	19195	N12 W28	267	(AP)	2	B	0	1	AXX		
73	6	11	12375	N13 W31	262	900	3.0	19195	N13 W36	266	(B)	2	B	10	7	BXO	6	2
73	6	12	12375	N13 W47	265	1200	3.5	19195	N13 W55	266	(BF)	4	B	40	26	CRI	15	4
73	6	13	12375	N13 W60	265	1600	3.5	19195	N13 W64	268	(BF)	3	G	100	27	DAI	14	4
73	6	14	12375	N13 W74	266	2100	4.0		N12 W77				G	170	7	DAI	15	4
73	6	15	12375	N15 W87	265	1500	4.0		N12 W90				B	30	1	HSX	11	3

MCMATH REGION 12376 CMP DATE 9.7

CALCIUM PLAGE DATA — SUNSPOT DATA — 9.1 CM

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	5	12376	S29 E55	255	100	1.0											

*An asterisk beside the "Return of Region" number indicates that the new region is only part of the area of the old region.

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MCMATH REGION 12377 — CMP DATE 11.6 — RETURN OF REGION 12358 — ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
73	6	5	12377	N13	E78	232	400	1.5
73	6	6	12377	N14	E60	231	800	2.0
73	6	7	12377	N14	E54	230	800	2.0
73	6	8	12377	N16	E41	230	800	2.0
73	6	9	12377	N15	E27	230	700	2.0
73	6	10	12377	N15	E15	230	800	2.0
73	6	11	12377	N15	E02	229	1000	1.5
73	6	12	12377	N16	W12	230	1000	2.0
73	6	13	12377	N16	W25	230	1000	1.5
73	6	14	12377	N17	W34	226	900	1.0
73	6	15	12377	N17	W50	228	600	1.0

SUNSPOT DATA — 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
										3	1
19205	N16	W01	231	(BP	2	B	10	1	AXX		
19205	N15	W19	230	AP		B	0	1	AXX		

MCMATH REGION 12379 — CMP DATE 13.2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
73	6	6	12379	N15	E85	206	900	3.0
73	6	7	12379	N15	E78	206	1500	3.5
73	6	8	12379	N15	E63	208	1300	4.0
73	6	9	12379	N16	E48	209	1800	4.0
73	6	10	12379	N16	E36	209	2000	3.5
73	6	11	12379	N16	E23	208	1700	3.0
73	6	12	12379	N17	E09	209	2000	3.5
73	6	13	12379	N17	W04	209	1700	3.5
73	6	14	12379	N17	W18	210	2000	3.0
73	6	15	12379	N18	W32	210	2100	3.0
73	6	16	12379	N18	W47	210	2000	3.0
73	6	17						
73	6	18	12379	N18	W75	210	1700	2.5
73	6	19	12379	N18	W88	213	800	1.0

SUNSPOT DATA — 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
19198	N15	E84	211		4	B	80	2	HSX	12	3
19198	N15	E71	211	(BP)	4	B	230	12	DKI	19	6
19198	N15	E60	209	(B)	4	B	220	13	DAI	21	6
19198	N15	E46	210	(BP)	4	B	150	15	DAI	25	7
19198	N15	E28	211	(BP)	4	B	110	19	DAI	25	7
19198	N16	E21	209	(BP)	4	B	100	14	DAO	21	6
19198	N16	E00	211	(BP)	4	B	70	20	CAO	18	5
19198	N16	W06	210	(BP)	4	G	120	13	DAO	11	3
	N17	W22				G	50	2	HSX	11	3
19198	N16	W38	212	(AP)	3	B	20	5	HRX	10	3
19198	N16	W47	210	(AP)	2	B	10	1	AXX	6	2
19198	N16	W65	211	(AP)	2	B	0	1	AXX	6	2
										6	2
										4	1

MCMATH REGION 12380 — CMP DATE 13.4 — RETURN OF REGION 12349 — ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
73	6	6	12380	S15	E86	205	400	1.0
73	6	7	12380	S15	E80	204	500	2.0
73	6	8	12380	S16	E65	206	500	2.0
73	6	9	12380	S16	E51	206	800	2.0
73	6	10	12380	S16	E39	206	800	2.5
73	6	11	12380	S16	E26	205	800	2.0
73	6	12	12380	S17	E12	206	900	2.5
73	6	13	12380	S17	W01	206	900	2.5
73	6	14	12380	S16	W14	206	900	2.0
73	6	15	12380	S16	W31	209	900	2.0
73	6	16	12380	S16	W46	209	900	1.5
73	6	18	12380	S16	W74	209	500	1.5
73	6	19	12380	S14	W87	212	300	1.0

SUNSPOT DATA — 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
19199	S15	E89	206	(AP)	3					4	1
19199	S16	E71	211	(AP)	3	B	90	2	HSX	7	2
19199	S16	E59	210	(AP)	4	B	80	1	HSX		
19199	S16	E45	211	(AP)	4	B	80	2	HSX		
19199	S15	E27	212	(AP)	3	B	70	1	HSX		
19199	S15	E22	208	(BP)	3	B	50	4	CSO		
19199	S16	E02	209	(BP	3	B	30	2	CSO		
19199	S15	W05	209	(BP)	3	G	40	1	HSX		
	S14	W22				G	30	1	HSX		
19199	S15	W38	212	(AP)	2	B	10	1	AXX		
19199	S15	W47	210	(AP)	1	B	0	1	AXX		
	S17	W77				B	10	1	AXX	4	1
										4	1

MCMATH REGION 12385 — CMP DATE 14.0

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
73	6	10	12385	N13	E51	194	300	3.0
73	6	11	12385	N13	E37	194	300	2.0
73	6	12	12385	N13	E20	198	300	2.5
73	6	13	12385	N13	E07	198	300	1.5
73	6	14	12385	N13	W04	196	500	1.5
73	6	15	12385	N13	W20	198	500	1.0

SUNSPOT DATA — 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
19202	N13	E43	196	(BP)	2	B	0	3	BXO		

MCMATH REGION 12382 — CMP DATE 14.7

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
73	6	8	12382	S13	E84	187	600	1.5
73	6	9	12382	S13	E68	189	1100	2.0
73	6	10	12382	S13	E55	190	1200	3.0
73	6							

SUNSPOT DATA — 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
										6	2
										6	2
19203	S14	E48	191			B	0	2	AXX	5	2
19204	S17	E56	183	(AP)	2						

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73	6	11	12382	S13 E42	189	1000	2.5	19203	S14 E37	193	(AP)	1	B	0	1	AXX	6	2
73	6							19206	S10 E40	190	(A)	2						
73	6							19204	S17 E48	182	(AF)	2	B	40	4	HAX		
73	6	12	12382	S13 E29	189	1200	3.0	19203	S14 E18	193							5	2
73	6							19206	S10 E22	189	A							
73	6	13	12382	S13 E16	189	1200	3.0										4	1
73	6	14	12382	S13 E03	189	1200	2.5										5	1
73	6	15	12382	S14 W11	189	1400	2.5	19206	S10 W17	191	A						4	1
73	6	16	12382	S14 W26	189	1200	3.0	19203	S14 W24	187	(BP)	2	B	10	1	AXX	6	2
73	6	17															3	1
73	6	18	12382	S14 W54	189	700	2.0											
73	6	19	12382	S13 W64	189	400	1.5											

MCMATH REGION 12391 CMP DATE 16.2

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	14	12391	N26 E22	170	100	1.5											
73	6	15	12391	N26 E08	170	200	1.0											

MCMATH REGION 12401 CMP DATE 16.8

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	20	12401	S16 W48	161	200	1.5											
73	6	21	12401	S16 W60	159	200	1.0											
73	6	22	12401	S16 W73	158	200	1.0											

MCMATH REGION 12389 CMP DATE 16.9 RETURN OF REGION 12352* ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	10	12389	N08 E87	158	500	1.0										5	2
73	6	11	12389	N08 E72	159	400	2.0											
73	6	12	12389	N08 E57	161	500	2.0											
73	6	13	12389	N07 E45	160	400	2.0	19208	N08 E38	166	A							
73	6	14	12389	N07 E32	160	500	2.0											
73	6	15	12389	N09 E14	164	500	2.0											
73	6	16	12389	N07 E03	160	400	2.5	19210	N15 W15	178								
73	6	17							N07 W02				B	0	1	AXX		
73	6	18	12389	N07 W28	163	400	1.5											
73	6	19	12389	N08 W39	164	400	2.0											
73	6	20	12389	N09 W51	164	400	2.0											
73	6	21	12389	N08 W67	166	500	1.5											
73	6	22	12389	N08 W80	165	400	1.0											

MCMATH REGION 12404 CMP DATE 17.2

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	20	12404														13	4
73	6	21	12404	N07 W57	156	300	2.5	19216	N07 W56	154	(AP)	1	B	10	1	AXX	8	2
73	6	22	12404	N07 W71	156	400	2.5	19216	N07 W69	154	A						6	2
73	6	23	12404	N07 W85	158	400	1.0											

MCMATH REGION 12387 CMP DATE 17.7 RETURN OF REGION 12352* ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	11	12387	N14 E80	151	1400	2.5	19207	N12 E60	150	(BF)	3	B	90	7	DAI	14	4
73	6	12	12387	N15 E66	152	2300	4.0	19207	N12 E60	151	(B)	4					4	1
73	6	13	12387	N16 E52	153	2300	3.5	19207	N12 E52	152	(BY)	4	G	200	20	DAI	22	6
73	6	14	12387	N14 E41	151	3100	3.5		N15 E40				G	130	13	DAI	22	6
73	6								N17 E47				G	60	4	DSO		
73	6	15	12387	N15 E27	151	3100	3.5	19207	N12 E22	152	(B)	3	B	20	33	CRI	16	5
73	6								N15 E20				B	0	3	AXX		
73	6							19209	N14 E27	147	(BP)	4	B	30	11	CRI		
73	6	16	12387	N15 E13	150	3300	3.5	19211	N16 E08	155	(A)	2					13	4
73	6							19207	N12 E13	150	(B)	3	B	70	29	CAI		
73	6							19209	N15 E16	147	(BP)	3	B	10	7	BXO		

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73	6	17							19211	N15 W05	151		1	B	0	4	AXX	9	3
73	6								19207	N11 W03	149	(BF)	3	B	120	21	CAO		
73	6								19209	N16 E01	145	BP		B	0	2	AXX		
73	6	18	12387	N15 W15	150	3000	3.5		19211	N15 W15	153	A		B	0	2	BXO	8	2
73	6								19207	N12 W13	151	(BY)	3	B	50	9	CAI		
73	6	19	12387	N15 W27	152	2700	3.0		19207	N13 W26	150	(BF)	3	B	30	16	CRO	5	1
73	6	20	12387	N14 W39	152	2500	3.0		19207	N12 W41	152	(B)	3	G	60	9	CRI		
73	6	21	12387	N14 W53	152	2200	3.5		19207	N12 W54	152	(BF)	4	B	20	10	BXO		
73	6	22	12387	N14 W67	152	2200	3.0		19207	N13 W65	150	(AF)	3	B	10	1	AXX		
73	6	23	12387	N14 W81	154	1600	3.0												

MCMATH REGION 12390 CMP DATE 19.7

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	13	12390	S10 E85	120	600	1.5										8	2
73	6	14	12390	S10 E72	120	1000	3.0											
73	6	15	12390	S11 E56	122	1300	3.0											
73	6	16	12390	S11 E41	122	1000	3.0	19212	S11 E41	122	BF						5	2
73	6	17															4	1
73	6	18	12390	S12 E12	123	900	3.0	19212	S10 E16	122	(AP)	1					4	1
73	6	19	12390	S10 E00	125	1000	3.0											
73	6	20	12390	S09 W11	124	900	2.5										5	3
73	6	21	12390	S09 W25	124	800	2.5		S05 W14				B	10	1	AXX	7	2
73	6	22	12390	S10 W38	123	1000	2.0										6	2
73	6	23	12390	S10 W52	125	800	2.0											
73	6	24	12390	S10 W65	124	700	1.5											
73	6	25	12390	S10 W80	127	500	1.0											

MCMATH REGION 12394 CMP DATE 21.3 RETURN OF REGION 12357 ROTATION 4

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	14	12394	S07 E90	102	800	1.0										11	3
73	6	15	12394	S04 E73	105	900	2.0										7	2
73	6	16	12394	S09 E64	99	1500	2.5										5	2
73	6	17															3	1
73	6	18	12394	S10 E33	102	1500	2.5										7	2
73	6	19	12394	S10 E20	105	1800	2.5										6	2
73	6	20	12394	S09 E11	102	1800	2.0										5	1
73	6	21	12394	S08 W02	101	1800	2.0										5	2
73	6	22	12394	S08 W16	101	2000	2.5										6	2
73	6	23	12394	S08 W30	103	2000	2.0											
73	6	24	12394	S09 W42	101	1900	2.0											
73	6	25	12394	S10 W52	99	2000	1.5											
73	6	26	12394	S11 W67	98	1800	1.0											
73	6	27	12394	S10 W83	100	400	1.0											

MCMATH REGION 12411 CMP DATE 22.4

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	27	12411	N04 W70	87	100	2.0											

MCMATH REGION 12396 CMP DATE 23.7 RETURN OF REGION 12364 ROTATION 2

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	18	12396	N20 E64	71	300	1.0											
73	6	19	12396	N20 E52	73	400	1.5											
73	6	20	12396	N20 E42	71	500	1.0											

MCMATH REGION 12397 CMP DATE 24.0

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	18	12397	S08 E71	64	800	4.0	19213	S07 E70	68	(BP	3	B	30	1	AXX		
73	6	19	12397	S08 E68	65	1200	4.0	19213	S08 E57	67	(BP)	5	B	190	18	DSI	31	9
73	6	20	12397	S08 E47	66	1500	4.0	19213	S08 E45	66	(BP)	4	G	280	12	DSI	33	10

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73	6	21	12397	S08 E34	65	1700	4.0	19213	S08 E33	65	(BP)	4	B	370	36	DHI	48	14
73	6	22	12397	S07 E20	65	2400	4.0	19213	S07 E18	67	(BP)	5	B	350	63	DAI	52	15
73	6	23	12397	S06 E07	66	2400	4.0	19213	S07 E06	66	(BP)	5	B	150	26	CAI	48	14
73	6								S10 E10				B	0	1	AXX		
73	6	24	12397	S06 W06	65	2200	4.0	19213	S07 W07	66	(BP)	5	G	400	40	DKI	49	14
73	6	25	12397	S07 W20	67	2300	4.5	19213	S07 W21	67	(BP)	5	G	260	34	DAI	39	11
73	6	26	12397	S07 W35	66	2100	4.0	19213	S07 W36	66	BP						36	10
73	6	27	12397	S07 W49	66	1800	4.0	19213	S07 W49	66	BP		B	200	37	DKC	22	5
73	6	28	12397	S07 W63	68	1800	4.0	19213	S07 W65	67	AP		G	180	14	DAO	19	6
73	6	29						19213	S08 W78	68	AP		B	10	4	AXX	14	4

MCMATH REGION 12398 CMP DATE 25.1

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	18	12398	S04 E85	50	800	2.0	19214	S03 E88	50			B	20	1	AXX	14	4
73	6	19	12398	S04 E77	48	1200	3.5	19214	S04 E73	51	(BP)	4	B	150	11	CSO		
73	6	20	12398	S04 E64	49	1200	4.0	19214	S03 E59	52	(D)	4	G	110	9	DAI		
73	6	21	12398	S04 E46	53	1500	3.5	19214	S03 E46	52	(BY)	5	B	320	17	DAI		
73	6	22	12398	S04 E33	52	2000	3.5	19214	S03 E33	52	(BP)	6	B	230	7	DKO		
73	6	23	12398	S04 E20	53	2000	3.5	19214	S03 E20	52	(BP)	5	B	140	12	DAO	19	6
73	6	24	12398	S04 E07	52	2300	3.5	19214	S03 E06	53	(BP)	5	G	260	18	DAO	13	4
73	6	25	12398	S04 W07	54	2100	3.5	19214	S03 W07	53	(BP)	4	G	80	9	DAO	10	3
73	6	26	12398	S04 W20	51	2100	3.5	19214	S03 W22	52	BP						10	3
73	6	27	12398	S04 W35	52	1800	3.5	19214	S03 W35	52	BP		B	30	6	CRO		
73	6	28	12398	S04 W49	54	1800	3.0	19214	S03 W51	53	AP		G	50	2	CSO		
73	6	29							S03 W65				B	10	2	AXX		
73	6	30	12398	S02 W76	54	1500	3.0											
73	7	1	12398	S02 W88	54	1200	1.5										6	2

MCMATH REGION 12403 CMP DATE 25.2 RETURN OF REGION 12360 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	19	12403	N15 E77	48	300	1.0											
73	6	20	12403	N15 E61	52	300	1.5											
73	6	21	12403	N15 E47	52	300	1.0											
73	6	22	12403	N15 E33	52	600	1.0											
73	6	23	12403	N16 E21	52	600	1.0											
73	6	24	12403	N15 E08	51	400	1.5											
73	6	25	12403	N15 W07	54	700	2.0											
73	6	26	12403	N15 W23	54	600	2.0											
73	6	27	12403	N15 W36	53	500	2.0											
73	6	28	12403	N16 W49	54	400	1.5											

MCMATH REGION 12402 CMP DATE 26.2

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	19						19215	S12 E85	39								
73	6	20	12402	S13 E80	33	900	3.5	19215	S12 E71	40	(BP)	3	G	20	2	BXO	14	4
73	6	21	12402	S13 E64	35	900	3.5	19215	S12 E61	37	(BP)	4	B	30	12	CRO	15	4
73	6	22	12402	S13 E50	35	1600	3.5	19215	S12 E47	38	(BP)	4	B	40	3	CSO	9	2
73	6	23	12402	S13 E35	38	1800	3.5	19215	S12 E33	39	(BP)	4	B	20	1	HSX	9	3
73	6	24	12402	S13 E22	37	1900	3.5	19215	S12 E19	40	(BP)	4	G	60	2	CSO		
73	6	25	12402	S13 E09	38	1900	3.5	19215	S12 E08	38	(BP)	4	G	40	8	CRO	7	2
73	6	26	12402	S13 W07	38	1700	3.5	19215	S12 W07	37	BP		R	20	6	CRO	10	3
73	6	27	12402	S13 W22	39	1900	3.5	19215	S12 W22	39	AP		B	50	19	CRO	9	3
73	6	28	12402	S13 W35	40	2200	3.0	19215	S12 W35	37	AP		G	70	9	DRO	6	2
73	6	29						19215	S13 W57	47	(AP)	3	B	10	3	AXX		
73	6	30	12402	S13 W60	38	2000	2.5		S13 W65				G	20	2	BXO		
73	7	1	12402	S13 W75	41	2000	2.0											
73	7	2	12402	S13 W88	32	300	1.0										4	1

MCMATH REGION 12408 CMP DATE 26.3

			CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	24	12408	N17 E25	34	200	1.5											
73	6	25	12408	N18 E11	36	300	2.0											
73	6	26	12408	N18 W04	35	300	1.0											
73	7	1	12408	N19 W67	33	200	1.0											

REGIONS OF SOLAR ACTIVITY

JUNE 1973

MCMATH REGION 12407 CMP DATE 27.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	25	12407	S16 E28	19	300	2.5	19217	S17 E26	20	(BP)	3						
73	6	26	12407	S17 E13	18	400	1.5											
73	6	27	12407	S17 W02	19	200	1.5											
73	6	28	12407	S17 W13	18	200	1.5											

MCMATH REGION 12410 CMP DATE 29.5

				CALCIUM PLAGE DATA				SUNSPOT DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	26	12410	S01 E38	354	100	1.0											

MCMATH REGION 12421 CMP DATE 29.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	ARFA	CNT	CLASS	INT	FLUX
73	7	4	12421	N12 W64	350	300	2.0										5	1
73	7	5	12421	N12 W76	349	300	1.0											

MCMATH REGION 12413 CMP DATE 30.2

				CALCIUM PLAGE DATA				SUNSPOT DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	27	12413	N04 E35	343	100	1.5											
73	6	28	12413	N03 E21	345	300	1.0											

MCMATH REGION 12409 CMP DATE 30.3 RETURN OF REGION 12366 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA								9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS	INT	FLUX
73	6	24	12409	S13 E70	350	700	1.0											
73	6	25	12409	S15 E60	348	1500	1.0											
73	6	26	12409	S14 E45	347	1600	1.0											
73	6	27	12409	S15 E32	346	1800	2.0										3	1
73	6	28	12409	S15 E20	346	1800	2.0		S05 E06			G		20	2	BXO		
73	6	30	12409	S15 W05	344	1800	2.0											
73	7	1	12409	S15 W16	342	1700	2.0		S05 W17			B		90	9	CAO	15	5
73	7	2	12409	S14 W29	341	1500	2.0		S03 W32			B		70	7	CAO	4	1
73	7	3	12409	S14 W41	339	1500	2.0											
73	7	4	12409	S15 W51	337	1700	1.5											
73	7	5	12409	S15 W60	333	1700	1.0											
73	7	6	12409	S15 W70	330	1200	1.0											

Note: Region 12390 has developed near the location of region 12361 of the previous rotation.
No calcium spectroheliograms were obtained at the McMath-Hulbert Observatory on June 17 and 29, 1973.
No sunspot observations were made at Mt. Wilson Observatory on June 1 and 14, 1973.

DAILY CALCIUM PLAGE INDEX

JUNE 1973

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
73	6	1	12.0	73	6	11	13.0	73	6	21	21.0
73	6	2	14.0	73	6	12	21.1	73	6	22	27.6
73	6	3	13.8	73	6	13	20.8	73	6	23	26.5
73	6	4	12.2	73	6	14	23.1	73	6	24	26.9
73	6	5	10.0	73	6	15	23.7	73	6	25	28.4
73	6	6	11.0	73	6	16	23.4	73	6	26	23.1
73	6	7	10.5	73	6	17	*	73	6	27	19.8
73	6	8	8.0	73	6	18	19.0	73	6	28	16.0
73	6	9	10.7	73	6	19	18.4	73	6	29	*
73	6	10	14.2	73	6	20	18.8	73	6	30	12.5

* NO OBSERVATIONS

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 10 – EXPLORER 44

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 10 – EXPLORER 44

JUNE 1973

NAVAL RESEARCH LABORATORY 1 - 8A HOURLY AVERAGES (10^{-3} ergs/cm^2/sec)

DAY	HOUR																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0.06	0.06	0.06	0.06	0.10	0.08	0.06	0.06	0.07	0.06	0.07	0.06	0.14	0.16	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.03
2	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.09	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
3	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
4	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
5	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.03	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
6	0.06	0.06	0.07	0.07	0.06	0.06	0.07	0.10	0.08	0.07	0.08	0.07	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.10	0.10	0.26	0.20	0.15
7	0.06	0.06	0.05	0.08	0.07	0.05	0.06	0.06	0.06	0.06	0.07	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.06	0.06	0.09	0.09	0.07	0.07
8	0.05	0.05	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.04	0.05	0.06	0.06	0.06	0.07	0.09	0.06	0.11	0.06	0.06	0.06	0.08	0.07
9	0.06	0.08	0.15	0.15	0.10	0.08	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.08	0.07	0.07	0.70	0.07	0.06	0.09	0.08	0.08
10	0.07	0.07	0.07	0.06	0.08	0.09	0.18	0.36	0.65	1.36	0.64	0.41	0.23	0.17	0.17	0.15	0.12	0.14	0.14	0.13	0.12	0.10	0.10	0.15
11	0.11	0.12	0.12	0.10	0.12	0.11	0.09	0.11	0.12	0.14	0.12	0.14	0.12	0.10	0.10	0.11	0.21	0.11	0.09	0.19	0.17	0.13		

SOLRAD 9 – EXPLORER 37

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0.13	0.20	0.15	0.15	0.21	0.16	0.16	0.16	0.14	0.16	0.28	0.14	0.25	0.37	0.18		0.20	0.14	0.19	0.13	0.28	0.17	0.15	0.13
2	0.16	0.15	0.17	0.13	0.11	0.13	0.11	0.17	0.15	0.15	0.13	0.18	0.17	0.13	0.16	0.15	0.13	0.22	0.21	0.19	0.34	0.12	0.17	0.12
3	0.15	0.20	0.14	0.18	0.36	0.15	0.13	0.15	0.15	0.17	0.14	0.17	0.14	0.14	0.19	0.15	0.16	0.16	0.12	0.25	0.13	0.10	0.12	0.14
4	0.17	0.15	0.14	0.17	0.16	0.14	0.13	0.14	0.12	0.18	0.15	0.15	0.12	0.13	0.26	0.11	0.16	0.16	0.41	0.18	0.24	0.19	0.17	0.21
5	0.22	0.14	0.14	0.16	0.14	0.15	0.15	0.15	0.15	0.18	0.12	0.13	0.19	0.17	0.21	0.11	0.17	0.28	0.13	0.11	0.15	0.15	0.21	0.15
6	0.13	0.18	0.18	0.17	0.14	0.20	0.19	0.17	0.21	0.25	0.18	0.15	0.16	0.13	0.17	0.17	0.17	0.40	0.14	0.15	0.16	0.20	0.12	0.17
7	0.12	0.16	0.15	0.17	0.15	0.13	0.14	0.18	0.20	0.17	0.16	0.19	0.16	0.22	0.18	0.14	0.24	0.16	0.25	0.17	0.18	0.16	0.12	0.16
8	0.15	0.14	0.17	0.19	0.17	0.13	0.18	0.12	0.20	0.17	0.14	0.16	0.14	0.19	0.14	0.23	0.17	0.29	0.17	0.16	0.22	0.15	0.17	0.19
9	0.15	0.16	0.20	0.25	0.17	0.14	0.17	0.12	0.17	0.16	0.14	0.17	0.19	0.14	0.12	0.16	0.15	0.16	1.05	0.21	0.14	0.16	0.15	0.16
10	0.19	0.13	0.17	0.16	0.15	0.18	0.23	0.43	0.31	1.27	0.59	0.42	0.29	0.26	0.37	0.28	0.28	0.21	0.21	0.17	0.20	0.37	0.17	0.18
11	0.19	0.16	0.18	0.17	0.19	0.14	0.22	0.18	0.18	0.17	0.18	0.26	0.28	0.20	0.19	0.27	0.24	0.21	0.15	0.22	0.20	0.19	0.17	0.21
12	0.19	0.13	0.17	0.15	0.16	0.14	0.29	0.22	0.16	0.19	0.20	0.19	0.20	0.16	0.27	0.22	0.15	0.16	0.17	0.24	0.14	0.18	0.34	0.27
13	0.47	0.33	0.59	0.67	0.47	0.84	0.49	0.25	0.27	0.26	0.18	0.26	0.22	0.25	0.23	0.18	0.20	0.21	1.07	0.20	0.18	0.22	0.21	0.36
14	0.34	0.38	0.40	1.02	0.37	0.30	0.31	0.20	0.34	0.32	0.28	0.38	0.30	0.36	0.20	0.25	0.61	0.24	0.31	0.21	0.21	0.26	0.22	0.26
15	0.34	0.24	0.18	0.22	0.37	0.40	0.44	0.38	0.30	0.24	0.33	0.21	0.23	0.22	6.11	0.38	0.37	0.38	0.31	0.23	0.23	0.35	0.37	0.22
16	0.24	0.19	0.20	0.20	0.19	0.20	0.16	0.16	0.15	0.25	0.17	0.19	0.17	0.18	7.03	1.13	0.50	0.21	0.26	0.28	0.18	0.15	0.15	0.18
17	0.14	0.15	0.12	0.13	0.12	0.15	0.12	0.13	0.15	0.12	0.14	0.22	0.13	0.22	0.13	0.16	0.11	0.13	0.14	0.16	0.16	0.14	0.14	0.16
18	0.14	0.15	0.17	0.14	0.19	0.27	0.20	0.23	0.30	0.18	0.27	0.23	0.24	0.23	0.20	0.17	0.16	0.15	0.29	0.20	0.14	0.19	0.28	0.25
19	0.47	0.25	0.19	0.25	0.28	0.34	0.30	0.26	0.36	0.38	0.45	0.67	0.56	0.34	0.37	0.30	0.38	0.60	0.37	0.19	0.21	0.26	0.24	0.41
20	0.69	0.74	0.57	0.45	0.44	0.38	0.51	0.28	0.30	0.39	0.37	0.43	0.34	0.23	0.27	0.33	0.48	0.24	0.23	0.41	0.37	0.32	0.43	0.24
21	0.21	0.43	0.42	0.21	0.25	0.24	0.22	0.24	0.37	0.27	0.31	0.40	0.31	0.22	0.21	0.24	0.18	0.19	0.25	0.49	0.33	0.22	0.21	0.37
22	0.37	0.28	0.24	0.28	0.30	0.27	0.27	0.37	0.37	0.28	0.45	0.33	0.55	0.31	0.26	0.22	0.16	0.16	0.17	0.21	0.17	0.21	0.17	0.17
23	0.16	0.16	0.20	0.19	0.35	0.23	0.23	0.16	0.21	0.21	0.28	0.26	0.15	0.29	0.23	0.29	0.22	0.31	0.23	0.18	0.31	0.18	0.20	0.28
24	0.23	0.24	2.58	0.96	0.27	0.25	0.34	0.85	0.31	0.17	0.19	0.25	0.24	0.18	0.19	0.16	0.17	0.20	0.19	0.19	0.33	0.20	0.16	0.16
25	0.15	0.22	0.16	0.18	0.21	0.19	0.16	0.23	0.23	0.18	0.32	0.17	0.28	0.19	0.18	0.26	0.17	0.19	0.18	0.20	0.14	0.18	0.19	0.20
26	0.85	4.86	6.31	1.34	0.65	0.35	0.28	0.23	0.37	0.31	0.19	0.27	0.16	0.21	0.16	0.57	0.21	0.12	0.22	0.16	0.18	0.14	0.21	0.34
27	0.23	0.21	0.16	0.21	0.19	1.94	0.42	0.19	0.23	0.16	0.20	0.29	0.18	0.20	0.15	0.14	0.15	0.16	0.15	0.20	0.17	0.17	0.17	0.23
28	0.20	0.17	0.18	0.24	0.31	0.40	0.22	0.92	0.64	0.29	0.40	0.24	0.55	0.24	0.19	0.92	0.23	0.40	2.19	15.5	0.67	0.37	0.23	0.47
29	0.25	1.38	1.47	1.85	0.33	0.22	0.25	0.28	0.65	0.31	0.19	0.23	0.58	0.70	0.18	2.29	0.56	0.34	0.16	7.66	5.29	1.12	0.35	0.26
30	0.48	0.28	0.17	0.24	0.19	0.21	0.23	0.24	0.27	0.21	0.37	0.32	0.19	0.22	0.21	6.78	0.85	0.27	0.23	0.18	0.22	0.51	3.75	0.25

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 10 – EXPLORER 44

JUNE 1973

NAVAL RESEARCH LABORATORY 8 - 20A HOURLY AVERAGES (10^{-2} ergs/cm^2/sec)

DAY	HOUR																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0.44	0.46	0.46	0.46	0.50	0.46	0.42	0.44	0.45	0.46	0.44	0.40	0.49	0.55	0.38	0.35	0.36	0.34	0.34	0.33	0.33	0.34	0.33	0.35
2	0.33	0.34	0.32	0.33	0.32	0.32	0.32	0.33	0.32	0.33	0.31	0.32	0.32	0.40	0.33	0.33	0.31	0.32	0.30	0.30	0.29	0.27	0.29	0.26
3	0.28	0.27	0.25	0.24	0.24	0.25	0.26	0.27	0.27	0.28	0.26	0.25	0.26	0.24	0.26	0.26	0.25	0.26	0.27	0.27	0.27	0.26	0.30	0.25
4	0.25	0.24	0.25	0.25	0.25	0.23	0.23	0.22	0.23	0.22	0.23	0.23	0.22	0.21	0.21	0.22	0.20	0.20	0.20	0.21	0.20	0.20	0.27	0.20
5	0.21	0.20	0.21	0.21	0.20	0.22	0.23	0.26	0.26	0.33	0.30	0.33	0.33	0.33	0.33	0.33	0.34	0.34	0.38	0.35	0.40	0.40	0.45	0.37
6	0.40	0.39	0.41	0.41	0.39	0.42	0.45	0.47	0.46	0.44	0.45	0.42	0.40	0.40	0.40	0.39	0.42	0.41	0.41	0.49	0.47	0.58	0.54	0.55
7	0.34	0.33	0.34	0.41	0.37	0.33	0.33	0.33	0.34	0.34	0.36	0.33	0.34	0.33	0.36	0.33	0.34	0.33	0.37	0.43	0.48	0.57	0.40	0.37
8	0.33	0.34	0.34	0.33	0.33	0.33	0.33	0.35	0.33	0.34	0.33	0.33	0.33	0.33	0.34	0.37	0.42	0.37	0.46	0.47	0.39	0.68	0.42	0.42
9	0.40	0.44	0.55	0.59	0.55	0.46	0.44	0.40	0.40	0.40	0.42	0.44	0.44	0.42	0.46	0.46	0.45	0.45	1.11	0.59	0.38	0.64	0.45	0.46
10	0.44	0.46	0.46	0.45	0.46	0.46	0.52	0.61	1.07	2.18	1.23	1.07	0.82	0.71	0.69	0.63	0.60	0.65	0.62	0.75	0.67	0.53	0.58	0.63
11	0.58	0.59	0.58	0.56	0.59	0.58	0.55	0.59	0.59	0.62	0.60	0.62	0.60	0.59	0.58	0.58	0.73	0.61	0.62	0.72	0.81	0.60		

SOLRAD 9 – EXPLORER 37

DAY	HOUR																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0.23	0.24	0.23	0.24	0.28	0.26	0.22	0.22	0.23	0.24	0.23	0.21	0.27	0.30	0.20	0.18	0.21	0.19	0.21	0.19	0.17	0.19	0.18	0.17
2	0.16	0.18	0.17	0.16	0.16	0.15	0.15	0.16	0.15	0.16	0.15	0.15	0.16	0.18	0.17	0.13	0.15	0.34	0.15	0.18	0.15	0.14	0.14	0.14
3	0.16	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.14	0.14	0.14	0.14	0.14	0.13	0.14	0.24	0.21	0.15	0.13	0.14	0.15	0.14	0.14
4	0.14	0.14	0.14	0.13	0.14	0.13	0.13	0.14	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.20	0.13	0.30	0.12	0.11	0.13	0.13	0.11
5	0.12	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.15	0.15	0.18	0.16	0.17	0.18	0.19	0.16	0.20	0.20	0.21	0.22	0.21	0.21
6	0.22	0.22	0.21	0.22	0.21	0.23	0.21	0.26	0.24	0.22	0.22	0.22	0.22	0.23	0.26	0.21	0.21	0.19	0.22	0.21	0.21	0.25	0.22	0.23
7	0.19	0.18	0.19	0.21	0.20	0.19	0.18	0.19	0.19	0.20	0.19	0.18	0.18	0.18	0.19	0.17	0.20	0.19	0.19	0.22	0.24	0.24	0.21	0.20
8	0.17	0.17	0.19	0.18	0.17	0.20	0.19	0.19	0.18	0.18	0.16	0.17	0.17	0.20	0.20	0.15	0.22	0.18	0.21	0.21	0.22	0.22	0.24	0.28
9	0.22	0.23	0.30	0.33	0.32	0.24	0.22	0.21	0.21	0.20	0.21	0.22	0.22	0.21	0.21	0.26	0.22	0.21	0.79	0.25	0.20	0.23	0.22	0.23
10	0.22	0.23	0.23	0.24	0.24	0.26	0.26	0.33	0.33	0.93	0.68	0.47	0.43	0.34	0.35	0.32	0.28	0.33	0.36	0.29	0.29	0.37	0.27	0.31
11	0.27	0.32	0.30	0.31	0.29	0.29	0.32	0.30	0.30	0.29	0.28	0.31	0.31	0.30	0.28	0.22	0.36	0.29	0.28	0.35	0.36	0.32	0.28	0.32
12	0.31	0.28	0.29	0.27	0.27	0.28	0.39	0.31	0.30	0.30	0.30	0.29	0.30	0.30	0.24	0.29	0.33	0.32	0.32	0.36	0.34	0.33	0.43	0.45
13	0.52	0.48	0.67	0.69	0.61	0.52	0.58	0.41	0.40	0.40	0.37	0.38	0.38	0.40	0.39	0.36	0.39	0.42	0.98	0.41	0.41	0.41	0.42	0.51
14	0.50	0.52	0.53	0.90	0.54	0.47	0.41	0.41	0.47	0.50	0.48	0.45	0.52	0.48	0.45	0.41	0.72	0.49	0.52	0.46	0.44	0.48	0.44	0.48
15	0.54	0.46	0.43	0.47	0.58	0.80	0.68	0.57	0.61	0.47	0.43	0.47	0.43	0.46	2.86	0.61	0.64	0.63	0.57	0.49	0.49	0.55	0.61	0.49
16	0.47	0.41	0.39	0.41	0.38	0.39	0.37	0.34	0.34	0.36	0.37	0.29	0.35	0.33	3.08	1.00	0.59	0.44	0.43	0.40	0.36	0.32	0.33	0.30
17	0.29	0.28	0.26	0.26	0.26	0.30	0.28	0.25	0.28	0.24	0.23	0.22	0.23	0.22	0.24	0.25	0.26	0.27	0.31	0.28	0.28	0.27	0.28	0.29
18	0.28	0.29	0.30	0.30	0.34	0.40	0.36	0.36	0.36	0.35	0.37	0.45	0.38	0.39	0.36	0.39	0.38	0.38	0.44	0.39	0.36	0.40	0.49	0.46
19	0.59	0.46	0.43	0.49	0.47	0.96	0.52	0.56	0.58	0.55	0.66	0.73	0.60	0.64	0.61	0.60	0.63	0.76	0.61	0.49	0.48	0.48	0.47	0.62
20	0.89	0.95	0.87	0.77	0.66	0.69	0.64	0.59	0.58	0.51	0.62	0.51	0.61	0.46	0.54	0.55	0.69	0.54	0.53	0.65	0.65	0.62	0.71	0.57
21	0.50	0.61	0.68	0.50	0.52	0.49	0.51	0.50	0.51	0.54	0.48	0.64	0.46	0.49	0.49	0.51	0.47	0.48	0.51	0.78	0.63	0.53	0.50	0.58
22	0.63	0.56	0.51	0.59	0.58	0.52	0.56	0.57	0.63	0.50	0.63	0.59	0.53	0.61	0.48	0.46	0.41	0.41	0.38	0.42	0.38	0.40	0.42	0.39
23	0.43	0.40	0.44	0.46	0.50	0.45	0.39	0.42	0.43	0.36	0.47	0.35	0.44	0.47	0.46	0.51	0.48	0.50	0.48	0.46	0.49	0.45	0.43	0.49
24	0.43	0.45	1.56	0.91	0.52	0.44	0.51	0.97	0.37	0.42	0.38	0.40	0.42	0.40	0.41	0.39	0.37	0.41	0.38	0.38	0.52	0.39	0.36	0.35
25	0.37	0.43	0.35	0.36	0.35	0.34	0.31	0.41	0.42	0.34	0.27	0.36	0.32	0.36	0.36	0.46	0.40	0.38	0.37	0.38	0.38	0.36	0.35	0.40
26	0.61	2.51	3.31	1.24	0.65	0.53	0.41	0.40	0.47	0.26	0.31	0.34	0.34	0.32	0.30	0.52	0.43	0.31	0.37	0.34	0.36	0.33	0.36	0.47
27	0.39	0.31	0.33	0.32	0.32	1.01	0.54	0.38	0.35	0.37	0.31	0.28	0.36	0.35	0.33	0.32	0.33	0.36	0.36	0.38	0.38	0.40	0.39	0.44
28	0.36	0.39	0.38	0.49	0.52	0.50	0.48	0.97	0.76	0.44	0.31	0.48	0.58	0.49	0.43	0.84	0.50	0.58	1.18	4.96	0.93	0.68	0.49	0.64
29	0.49	0.93	1.16	1.14	0.59	0.46	0.49	0.29	0.50	0.33	0.41	0.35	0.59	0.62	0.36	0.99	0.52	0.51	0.37	2.17	2.56	1.28	0.62	0.50
30	0.55	0.44	0.39	0.40	0.39	0.37	0.38	0.43	0.32	0.42	0.42	0.30	0.33	0.39	0.39	2.90	1.03	0.55	0.41	0.35	0.38	0.45	1.76	0.44

SOLAR X-RAYS BY SATELLITE
EXPLORER 37

JUNE 1973

NAVAL RESEARCH LABORATORY

OUTSTANDING EVENTS

DAY	START TIME	0.5-3A FLUX XE-5	PEAK TIME	1-8A FLUX XE-4	PEAK TIME	8-20A FLUX XE-3	PEAK TIME	END TIME	COMMENTS
15	1410	100.00	1413	310.00	1414	93.00	1418	1432	
16	1423	70.00	1428	270.00	1431	93.00	1432	1450	
24	0230	12.00	0244	45.00	0247	23.00	0251	0256	
26	0142	32.00	0147	97.00	0147	53.00	0200	0231D	
27	0538	36.00	0539	86.00	0540	28.00	0541	0547	
28	1844E	0.00D	1850D	65.00	1849	22.00	1846	1850	
28	1859	120.00	1907	670.00	1905	150.00	1908	1932	
29	0152	17.00	0155	64.00	0156	28.00	0200	0203	
29	0327	19.00	0329	67.00	0334	29.00	0335	0339	
29	1948	120.00	1952	530.00	1950	130.00	1951	2020D	
30	1521	85.00	1523	220.00D	1521E	67.00	1522	1555	
30	2159	26.00	2200	68.00	2201	25.00	2202	2218	

Note: Data from SOLRAD 10 are not available after 2200 UT on June 11 due to a malfunction of the data storage system. Hourly flux values and X-ray flares will be reported from SOLRAD 9 until SOLRAD 10 resumes normal operation.

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1973

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	1605	1625	1614	1-	1	1							1610E	12364
06	2115	2120	2116	1-	1							1	*	
07	1114	1140	1127	1-	1			1					1116	12379
09	1816	1900	1821	1-	3						8		1815	12379
12	0800	0837	0820	1	3					1	2		0750	12387
13	0640	0730	0656	1-	1						1		0644	12379
13	1800	1845	1825	1-	5				1		7		1756	12387
14	0905	1000	0952	1-	1					1	1		0905	12387
14	1021E	1055	1030U	1-	1			1					1016	12387
15	0026	0028	0027	1-	1							1	0030E	12387
15	1247	1254	1248	1-	1			1					1241E	12382
15	1410	1455	1417	2	5	7	2	6	4	1	9	1	1404	12379
16	1404	1418	1412	1-	1			1	1				1403	12387
16	1423	1510	1434	2	5	6	1	6	3	1	10	1	1420	12387
16	1945	1947	1946	1-	1							1	1947E	12387
18	0453	0514	0456U	1-	1			1					0449	12387
20	0905	0907	0906	1-	1							1	0900	12398
24	0045	0055		1-	1			1					*	
24	0218	0356	0246	1-	1				1				0218	12398
25	1748	1752U	1749	1-	1							1	1748	12397
26	0039	0118	0053	1-	1				1				0038	12398
26	0140	0256	0156	1-	3	1			2				0135E	12397
26	1250E	1330	1255	1-	1			1					1248	12402
27	0535	0555	0542	1-	5			1	2				0533	12402
28	0802	0807	0803	1-	1							1	0802E	12402
28	1843	1900D	1848	1+	5	1				1	6	1	1841	12417
28	1900	2028	1906	2+	5	4	2	2	4	1	7	1	1901U	12397
29	0148	0243	0157	1-	3				2				0145	12402
29	0325	0436	0335	1-	3				2				0324E	12417
29	0804	0840	0811	1-	1						1		0802	12414
29	1308	1400	1320	1-	1				1		1		1307	12414
29	1515	1535	1521	1+	5	4			2		9	1	1511	12414
29	1910	1942	1913	1-	3						5		1908	12414
29	1949	2100	1951	1+	5	5	2	4	2	1	8	1	1946	12417
30	0052	0110	0057	1-	3				2				0055	12414
30	1515	1555	1528	2-	5	8	2	5	3	1	10	1	1514	12417
30	2157	2240	2203	1	5	1		2	2		6	1	2202E	12417

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1973

STATIONS REPORTING FOR JUNE 1973

AAVSO (A1, A17, A19, A23, A26, A32, A34, A39)(SEA) (A1, A19, A21, A30, A31, A33, A36, A37, A38)(SES) (A31)(SWF)
BOULDER (BO) (SCNA, SEA)
DARMSTADT (DA) (SWF)
ENKOPING (SW) (SWF, SPA)
GESASHI (LORAN-C) (GE) (LF-SPA, SES)
HAWAII (HA) (SFD)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
JUPITER (LORAN-C) (JP) (LP-SPA, SES)
KUHLUNGSBORN (KU) (SEA, SPA)
MANILA (MA) (SPA)
MARCUS (LORAN-C) (MR) (LF-SPA, SES)
McMATH (MC) (SWF, SCNA)
NEUSTRELITZ (NU) (SWF, SCNA)
PANSKA VES (PU) (SWF, SEA, SES)
POITIERS (PO) (SEA)
PRESTON (LO) (SEA)
SACRAMENTO PEAK (SP) (SFD)
SAO PAULO (UM) (SPA, SES)
SOFIA (SF) (SES)
SYLT (LORAN-C) (ST) (LF-SPA, SES)
TABLE MOUNTAIN (TM) (SWF, SPA, LF-SPA)
TORINO (TN) (SPA)
TRINIDAD (TR) (SWF)
UPICE (UI) (SEA)
WHITE SANDS (WS) (SWF)

A39 IS A NEW OBSERVER REPORTING FOR THE FIRST TIME FROM MANGROVE BAY, SOMERSET, BERMUDA

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-24	0000-2400 A32
01	1400-1755 UM (17 kHz)
02	2145-2345 UM (13 kHz)
03-11	1330-1550 HU
03	0110-0220 UM (13 kHz), 1230-1520 PO
04	1515-1110 BO
05	0320-1400 UM (13 kHz), 1005-1415 UM (16 kHz)
06	1424-2024 TR, 1529-1553 A31
07	2055-2108 TM
08	1524-1529 TM, 2107-2136 A31
10	1215-1955 PO
11	0000-2400 A38, 1720-1800 TM
12	0832-1125 BO, 1020-1337 UM (16 kHz), 1200-1955 PO, 2110-2400 WS
13	0000-1610 WS, 0705-0910 UM (16 kHz), 1145-1800 PO
14-30	0000-2400 A33
14	1145-1615 PO
15	1147-1230 TR
16-19	0000-2400 A23
17-22	0000-2400 A30
19	1522-1606 TM, 2108-2208 TM
20	1950-2140 MA
23	1522-1821 TR
24	0903-1211 TM, 1103-2354 WS, 1453-1518 TR
25	1000-1400 PO, 1254-1255 TR, 1600-1955 PO
26	0000-1745 PO, 1511-2000 WS, 2010-2105 MA
27	1012-1258 TM, 1125-1320 PO, 1640-1955 PO
28	0442-1246 TM
29	1126-1245 TR, 1140-1445 PO

SID's BY McMATH REGION

JUNE 1973

DAY	64	79	82	87	97	98	02	14	17	X-RAY	UN-KNOWN	NO FP
01	1											
02												
03												
04												
05												
06												1
07		1										
08												
09		1										
10												
11												
12				1								
13		1		1								
14				2								
15		1	1	1								
16				3								
17												
18				1								
19												
20						1						
21												
22												
23												
24						1						1
25					1							
26					1	1	1					
27							1					
28					1		1		1			
29							1	4	2			
30								1	2			

JUN. 1973	
01	
02	
03	
04	
05	
06	
07	
08	
09	

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1973

JUN. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
01	0000	0230	BOUL													
	0000	0139	HARV													
	0000	0730	CULG							0339	0340.5	1				IIIG
			CULG							0428		1				IIIB
	0748	0830	WEIS													
	0840	1900	WEIS													
	1231	2400	HARV													
	1130	2400	BOUL							1256.7	1257.7	2	1256.7	1257.7	2	III
	0913	2410	SGMR										1257.8	1259.0	1	III
	2030	2400	CULG													
02	0000	0730	CULG													
	0000	0139	HARV													
	0000	0230	BOUL													
	0350	1356	WEIS													
	0912	2410	SGMR													
	1130	2400	BOUL													
	1231	2400	HARV													
	1415	1906	WEIS													
	2230	2400	CULG													
03	0000	0730	CULG													
	0000	0140	HARV													
	0000	0230	BOUL													
	0345	1907	WEIS							1008.5-	1008.8	2				IIIG
	0912	2411	SGMR										1008.6	1009.1	1	III
	1231	2400	HARV													
	2030	2400	CULG							2113.5	2114.5					IIIG,W
			CULG							2116.5	2117	1				IIIG
	1130	2400	BOUL							2117.0	2117.2	1	2117.0	2117.2	1	III
			BOUL							2303.1	2303.7	1	2303.1	2303.7	1	III
04	0000	0230	BOUL													
	0000	0730	CULG													
	0000	0141	HARV													
	0815	0920	WEIS													
	0912	2412	SGMR													
	0923	1303	WEIS													
	1231	2400	HARV													
	2030	2400	CULG													
	1130	2400	BOUL							2101.0	2101.5	1	2101.0	2101.5	1	III
05	0000	0230	BOUL													
	0000	0142	HARV													
	0000	0702	CULG							0303	0304	1				IIIG
			CULG							0306	0306.5					IIIG,W
	0340	1605	WEIS													
			CULG							0444		1				IIIB
			CULG							0445.5						IIIB,W
			CULG							0516						IIIB,W
	0718	0730	CULG													
	0911	2412	SGMR													
	1130	2400	BOUL													
	1231	2400	HARV													
	1629	1913	WEIS													
	2030	2400	CULG							2148	2337					IN,W
06	0000	0730	CULG													
	0000	0142	HARV													
	0000	0230	BOUL													
	0343	1922	WEIS													
	0911	2413	SGMR													
	1130	2400	BOUL													
	1231	2400	HARV													
	2031	2400	CULG													
07	0000	0142	HARV													
	0000	0230	BOUL													
	0345	0653	WEIS													
	0000	0736	CULG							0522	0524					IN
	0656	1906	WEIS													
	0911	2413	SGMR													
	1231	2400	HARV													
	1130	2400	BOUL							1629.7	1629.9	1	1629.7	1629.9	1	III
	2030	2400	CULG							2205.5						IIIB,W
08	0000	0142	HARV													
	0000	0230	BOUL													
	0000	0731	CULG							0146.5	0147	1				IIIG
	0337	1217	WEIS													
	0911	2414	SGMR													
	1130	2400	BOUL													
	1221	1909	WEIS													
	1231	2400	HARV													
	2031	2400	CULG													
09	0000	0731	CULG													
	0000	0142	HARV													
	0000	0230	BOUL													
	0337	1710	WEIS													

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1973

JUN. 1973	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: CENTIMETRIC BAND START UT	CENTIMETRIC BAND END UT	CENTIMETRIC BAND INT.	DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT.	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT.	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT.	SPECTRAL TYPE
09	1230	2400	HARV							1636	1637	2	1636	1637	2	IIIG
	1130	2400	BOUL							1636.6	1637.6	2	1636.6	1637.6	2	IIIG
	0911	2415	SGMR										1636.7	1637.7	2	III
	1730	1910	MEIS													
			BOUL							1804.5	1804.8	1	1804.5	1804.8	1	III
			SGMR										1804.7	1805.0	1	III
	2031	2400	CULG							2155	2156	1				IIIG
			BOUL										2158.9	2159.0	1	III
			CULG							2159		1				IIIB
			CULG							2203		1				IIIB
			BOUL							2203.0	2203.4	2	2203.0	2203.4	2	III
			CULG							2219	2400					IS,W
			CULG							2236	2318					IIIN,W
			BOUL							2238.7	2238.9	1	2238.7	2238.9	1	III
			CULG							2239		1				IIIB
			CULG							2246	2247.5	2				IIIG
			HARV							2246	2247	2	2246	2247	2	IIIG
			BOUL							2246.2	2247.3	2	2246.2	2247.3	2	IIIG
			SGMR										2246.5	2246.8	2	III
			BOUL							2257.8	2259.1	1	2257.8	2259.1	1	IIIG
			CULG							2258	2300					IIIG,V,W
			CULG							2303.5	2305	1				IIIG
			BOUL							2303.7	2304.1	1	2303.7	2304.1	1	III
10	0000	0731	CULG							0000	0622					IN,W
			CULG							0004	0649					IIIN,W
			CULG							0006.5		1				IIIB
	0000	0143	HARV							0010	0014	2	0012	0014	1	IIIGG
			CULG							0010.5		1				IIIB
	0000	0230	BOUL							0011.8	0014.9	3	0011.8	0014.9	3	III
			CULG							0012	0014.5	2				IIIGG,V,U
			CULG							0020.5	0027					IIN
			CULG							0022	0022.5	1				IIIG
			BOUL							0025.9	0026.4	1	0025.9	0026.4	1	III
			CULG							0026		1				IIIB,V
			BOUL							0053.0	0057.2	3	0053.0	0057.2	3	III
			CULG				0054	0055	1	0053.5	0057	2				IIIGG,V,U
			HARV				0054	0057	1	0054	0057	2	0054	0055	2	IIIGG
			CULG				0056.5	0057	1	0056.5	0057.5	1				IIIG
			CULG							0059	0108	1				II
			CULG							0059	0101.5	1				IIIG
			HARV							0059	0101	2				IIIG
			CULG							0150	0150.5	2				IIIG
			BOUL							0150.7	0151.0	1	0150.7	0151.0	1	III
			CULG							0221	0222	1				IIIG
			CULG							0223.5	0224	2				IIIG
			CULG							0225		1				IIIB
			CULG							0226	0227	1				IIIG
			CULG							0230.5	0231.5	1				IIIG
			CULG							0250		1				IIIB
			CULG							0324	0325	2				IIIG
			CULG							0325.5	0327.5	1				IIIG
			CULG							0328.5	0329	1				IIIG
			CULG							0330	0330.5	1				IIIG
			CULG							0333		1				IIIB
			CULG							0411	0412	1				IIIG
	0337	1906	MEIS							0411.1	1418.5	1				IIIG,N
			CULG							0413	0414	1				IIIG
			CULG							0419.5	0421	2				IIIG,V
			CULG							0421.5	0423.5	1				IIIGG
			CULG							0431.5	0432	1				IIIG
			CULG							0512	0515	2				IIIG,V
			MEIS							0512.0	0514.0	2				IIIG
			CULG							0528	0529	1				IIIG
			CULG							0536	0536.5	1				IIIG
			CULG							0558.5		1				IIIB
			CULG							0615	0616.5	2				IIIG,V
			CULG							0620.5	0622	2				IIIG
			CULG							0628		1				IIIB
			CULG							0629	0629.5	1				IIIG
			MEIS							0845.5	0854.5	2				II
	0911	2415	SGMR										1114.9	1115.2	1	III
	1331	2400	HARV													
	1130	2400	BOUL							1410.2	1412.3	2	1410.2	1412.3	2	III
			SGMR										1411.0	1412.3	2	III
			BOUL										1955.1	1956.8	1	III
	2033	2400	CULG													
11	0000	0230	BOUL													
	0000	0143	HARV													
	0337	0627	MEIS													
	0000	0731	CULG							0508.5	0509	1				IIIG,U
			CULG							0617	0618	1				IIIG
			CULG							0641.5	0644	1				IIIG
	0625	1909	MEIS													
	0910	2416	SGMR													
	1130	2400	BOUL													
	1231	2400	HARV				1332	1744	1							IN
	2033	2400	CULG							2121		1				IIIB
			CULG							2126.5	2127	1				IIIG

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				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
12	0000	0230	BOUL													
	0000	0143	HARV													
	0000	0731	CULG							0057.5	0344					IW
			CULG							0100.5	0320.5	1				IIIN
			CULG							0336	0339	1				IIIG
	0338	1245	WEIS													
	1136	2400	BOUL													
	1713	1909	WEIS													
	0910	2417	SGMR										2103.9	2105.0	1	III
	2032	2400	CULG							2235.5	2319					IIIN,W
			CULG							2241	2347.5					IW
	1231	2400	HARV							2302	2304	1				IIIG
			CULG				2303	2303.5	1	2303	2304.5	1				IIIG
13	0000	0230	BOUL													
	0000	0731	CULG							0013	0015	1				IIIGG
	0000	0143	HARV							0013	0015	1				IIIG
			CULG							0034	0731	1				IIIN
			CULG							0050	0053	1				IIIGG
			HARV							0050	0053	1				IIIG
			CULG				0055	0055.5	1	0055.5	0056	1				IIIG
			CULG							0149.5	0150.5	1				IIIG,U
			CULG				0223	0544		0017	0637.5					IW
			CULG							0227	0228	2				IIIGG,U
			CULG							0232.5	0233.5	2				IIIG
			CULG				0311	0312	1	0311	0312	1				IIIG
			CULG				0652.5	0654	1							IIIG
			CULG				0658	0701.5	1							IIIG
	0339	1909	WEIS							0801.0	0801.6	2				UNCLF
			WEIS							0805.3	0805.7	2				UNCLF
	0910	2417	SGMR													
	1130	2400	BOUL													
	1231	2400	HARV													
	2033	2400	CULG							2115.5	2116	1				IIIG
14	0000	0143	HARV													
	0000	0732	CULG							0018.5	0020	1				IIIG,V
	0000	0230	BOUL							0019.0	0019.6	2	0019.0	0019.6	2	III
			CULG							0115	0116	1				IIIG
			BOUL							0115.0	0115.5	1	0115.0	0115.5	1	III
			CULG							0134.5	0135.5					IIIG,W
			CULG				0359	0403.5	1	0401	0405.5	1				IIIGG
			CULG				0440.5	0442.5	1	0440.5	0443	2				IIIG,V
	0339	0635	WEIS							0440.9	0441.4	3				UNCLF
			CULG							0449.5		1				IIIB
			CULG							0453.5	0456	1				IIIG,V,U
			CULG							0623.5						IIIB,W
			CULG							0630.5						IIIB,W
			WEIS							1045.5	1046.5	2				IIIB
	0910	2418	SGMR										1045.6	1046.4	3	III
	1233	2400	HARV													
	1130	2400	BOUL							1519.6	1519.9	1	1519.6	1519.9	1	III
			BOUL										1615.8	1616.0	1	III
			BOUL										1619.7	1619.8	1	III
			BOUL										2059.4	2100.7	1	IIIG
	2240	2400	CULG							2240	2400	1				IS
15	0000	0730	CULG							0000	0655	1				IS
	0000	0230	BOUL													
	0000	0144	HARV													
			CULG							0257.5		1				IIIB
			CULG							0259.5	0302.5	1				IIIG,V
			CULG							0512	0513.5	1				IIIG,U
	1155	1313	WEIS													
	1219	2400	HARV				1409	1411	2	1409	1410	2				IIIG
	1130	2400	BOUL							1409.5	1410.0	1	1409.5	1410.0	1	III
	0337	1153	WEIS							1409.6	1409.9	1				IIIB
	0910	2418	SGMR										1409.8	1410.3	1	III
	2032	2400	CULG							2202	2203	1				IIIG
			BOUL							2202.1	2202.7	1	2202.1	2202.7	1	IIIG
			BOUL							2344.4	2344.6	1	2344.4	2344.6	1	III
			CULG							2344.5		1				IIIB
16	0000	0230	BOUL													
	0000	0144	HARV													
	0000	0732	CULG							0017		1				IIIB
			CULG							0256.5	0257	1				IIIG
			CULG							0259		1				IIIB
			CULG							0302.5	0303.5	2				IIIG,V,U
			CULG							0535	0536					IIIG,W
	0910	2418	SGMR										1122.9	1123.3	1	III
	0339	1626	WEIS							1122.9	1123.0	1				IIIG
			SGMR										1404.3	1404.8	2	III
	1130	2400	BOUL							1404.6	1405.6	2	1404.6	1405.6	2	IIIG
	1220	2400	HARV				1421	1429	3	1421	1425	2	1422	1425	2	IIIGG,RS
			SGMR										1421.3	1430.5	3	V
			BOUL							1421.3	1429.0	3	1421.3	1429.0	3	IIIG
			WEIS							1421.8	1424.7	3				IIIGG,RS
			BOUL										1430.0	1430.5	1	III
			BOUL							1432.8	1441.0	3	1432.8	1441.0	3	IIF

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JUN. 1973	TIMES OF OBSERVATION		STATION	EVENTS													SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
16			BOUL							1433.8	1437.7	3	1433.8	1437.7	3	IIIH
			HARV							1434	1441	2	1438	1448	1	II
			SGMR										1434.0	1445.9	2	II
			BOUL							1538.5	1538.7	1				III
			BOUL							1607.1	1607.3	1				III
			BOUL							1614.5	1614.7	1	1614.5	1614.7	1	IIIG
	1630	1635	WEIS													
	1645	1646	WEIS													
	1700	1914	WEIS													
			BOUL							1843.5	1843.7	1				III
			HARV							1944	1948	3	1945	1948	3	IIIGG,U,V
			SGMR										1945.8	1947.1	3	III
			BOUL							1945.8	1947.6	3	1945.8	1947.6	3	III
	2033	2400	CULG							2113.5	2126.5	1				IN
			CULG				2126		1	2126		1				IIIB
			CULG				2155	2157	1	2155	2157.5	2				IIIGG,V
			BOUL							2155.5	2159.0	3	2155.5	2159.0	3	IIIG
			SGMR										2155.7	2157.2	2	III
			HARV				2156	2157	1	2155	2158	2	2156	2157	2	IIIGG
			CULG				2224.5	2225								IIIG,W
			CULG				2329	2330								IIIG,W
			CULG							2339	2340	1				IIIG,W
			BOUL							2339.5	2339.7	1	2339.5	2339.7	1	III
			CULG							2359						IIIB,W
17	0000	0230	BOUL							0012.8	0013.1	1	0012.8	0013.1	1	III
	0000	0732	CULG				0013	0013.5	1	0013	0013.5	1				IIIG
	0000	0144	HARV							0013	0139	1				IIIN
			CULG							0112	0113.5	1				IIIG,V
			BOUL							0112.5	0113.6	3	0112.5	0113.6	3	IIIG
			CULG							0122.5						IIIB,W
			CULG							0123.5	0125.5					IIIG,W
			HARV							0125	0128	1				IIIGG
			CULG							0126.5	0127	1				IIIG
			BOUL							0126.9	0127.5	1				IIIG
			BOUL							0133.3	0133.8	3	0133.3	0133.8	3	III
			CULG							0133.5		2				IIIB
			CULG							0139	0139.5	1				IIIG
			CULG							0213						IIIB,W
			CULG							0230.5		1				IIIB
			CULG				0421.5	0422	1	0421.5	0422	1				IIIG
	0343	1915	WEIS							0421.6	0421.8	3				IIIG
	2033	2400	CULG							2114.5	2400	1				IS
			CULG							2322.5	2324.5	2				IIIG,V
	1219	2400	HARV							2323	2324	2	2323	2324	3	IIIGG
	1130	2400	BOUL							2323.0	2324.5	3	2323.0	2324.5	3	III
	0910	2419	SGMR										2323.1	2324.1	2	IIIG
			CULG							2344.5		1				IIIB
18	0000	0733	CULG							0000	0322					IS,W
	0000	0230	BOUL													
	0000	0144	HARV													
			CULG							0100						IIIB,W
	0339	0615	WEIS													
	1220	2400	HARV													
	1130	2400	BOUL							1259.2	1301.6	1	1259.2	1301.6	1	IIIG
	0910	2419	SGMR										1300.2	1301.0	1	III
	2033	2400	CULG							2231.5		1				IIIB
			CULG							2311	2311.5	1				IIIG
			BOUL							2311.5	2311.7	1	2311.5	2311.7	1	III
			CULG							2313		1				IIIB
			BOUL										2313.2	2313.4	1	III
			BOUL							2314.7	2314.8	1	2314.7	2314.8	1	III
			CULG							2315		1				IIIB
			CULG							2316						IIIB,W
			BOUL							2326.9	2327.1	1	2326.9	2327.1	1	III
			CULG							2327		1				IIIB
			CULG							2343						IIIB,W
19	0000	0144	HARV													
	0000	0733	CULG							0029	0553					IIIN,W
			CULG							0030		1				IIIB
	0000	0236	BOUL							0030.2	0030.4	1	0030.2	0030.4	1	III
			CULG							0031	0708					IS,W
			BOUL										0031.5	0031.8	1	III
			CULG							0241	0242.5	1				IIIG,V
			CULG							0525		1				IIIB
	1208	1912	WEIS													
	1130	2400	BOUL							1421.2	1421.3	1	1421.2	1421.3	1	III
			BOUL							1541.8	1542.0	1	1541.8	1542.0	1	III
	1219	2400	HARV							1543	1738	1				IN
			BOUL							1558.6	1559.1	1	1558.6	1559.1	1	III
			BOUL							1601.4	1601.9	2	1601.4	1601.9	2	III
			BOUL							1619.8	1619.9	1	1619.8	1619.9	1	III
			BOUL							1714.7	1714.9	1				III
			BOUL							1753.6	1753.8	2	1753.6	1753.8	2	III
	0910	2419	SGMR										1902.1	1902.7	1	III
			BOUL							2024.6	2025.0	1	2024.6	2025.0	1	IIIG
	2032	2400	CULG				2105	2400		2109.5	2400					IS,W
			CULG							2108.5						IIIB,W

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				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
20	0000	0728	CULG				0000	0705	1	0000	0705	1				IS
			CULG							0020	0512					IIIN,W
	0000	0230	BOUL							0023.0	0023.2	1				III
	0000	0145	HARV							0043	0143	1				I
			BOUL										0100	0200	1	CONT
			BOUL							0156.3	0156.4	1	0156.3	0156.4	1	III
	0339	1704	MEIS													
			CULG							0540	0700	1				CONT
	1217	2400	HARV													
	1130	2400	BOUL										1338.2	1338.4	1	III
			BOUL							1339.2	1339.4	1	1339.2	1339.4	1	III
	0910	2419	SGMR										1456.0	1456.6	1	III
			BOUL							1456.1	1456.3	1	1456.1	1456.3	1	III
			BOUL							1529.3	1530.0	1	1529.3	1530.0	1	IIIG
			SGMR										1529.3	1543.9	1	IIIG
			BOUL							1543.0	1543.6	2	1543.0	1543.6	2	IIIG
	1722	1910	MEIS													
			BOUL										1906.0	1930	1	CONT
			SGMR										1915.9	1916.3	1	III
	2035	2400	CULG							2105	2239.5					IW
21	0000	0145	HARV													
	0000	0232	BOUL													
	0000	0733	CULG							0145	0146	1				IIIG
			CULG							0154	0155					IIIG,W
			CULG							0154.5	0207					IW
			CULG							0257	0258					IIIG,W
	0340	1314	MEIS													
	1207	2420	SGMR													
	1217	2400	HARV													
	1130	2400	BOUL							1745.5	1745.8	1	1745.5	1745.8	1	III
	2035	2400	CULG							2109	2338.5	1				I
			CULG							2218						IIIB,W
22	0000	0145	HARV													
	0000	0733	CULG							0024	0640	1				IIIN
	0000	0230	BOUL							0043.2	0043.3	1	0043.2	0043.3	1	III
			CULG							0144.5	0703	1				IS
	0340	0645	MEIS													
	0658	1315	MEIS													
	1216	2400	HARV							1444	1446	1				IIIG
	0911	2420	SGMR										1444.4	1445.3	1	III
	1130	2400	BOUL							1444.4	1446.7	1	1444.4	1446.7	1	IIIGG
			BOUL										2002.3	2002.5	1	III
			BOUL										2007.0	2007.1	1	III
			BOUL							2011.0	2013.7	1	2011.0	2013.7	1	III
	2035	2400	CULG							2216.5	2218					IIIG,W
			CULG							2259.5	2302					IIIG,W
23	0000	0734	CULG													
	0000	0145	HARV													
	0000	0230	BOUL													
	0341	1140	MEIS													
	0911	2420	SGMR													
	1130	2400	BOUL													
	1157	1316	MEIS													
	1217	2400	HARV													
	2035	2124	CULG													
	2157	2400	CULG													
24	0000	0145	HARV													
	0000	0230	BOUL													
	0343	1504	MEIS													
	0000	0733	CULG							0515.5	0517					IIIG,W
	1216	2400	HARV													
	1130	2400	BOUL							1446.7	1448.4	1	1446.7	1448.4	1	IIIG
	0911	2420	SGMR										1447.7	1447.9	1	III
	1515	1521	MEIS													
	1526	1912	MEIS													
	2035	2400	CULG													
25	0000	0436	CULG													
	0000	0146	HARV													
	0000	0230	BOUL													
	0446	0730	CULG				0446	0728	1							IS
			CULG							0632.5						IIIB,W
	0341	1421	MEIS							0958.1	0959.4	1				IIIG
	0911	2420	SGMR										0959.0	0959.9	1	III
	1217	2400	HARV				1415	1901	1							IN
	1424	1913	MEIS													
	1130	2400	BOUL							1822.1	1822.5	1	1822.1	1822.5	1	III
			SGMR										1822.3	1822.6	1	III
			BOUL							2049.4	2051.2	1	2049.4	2051.2	1	III
			SGMR										2050.3	2051.1	1	III
			CULG				2105	2400	1	2328	2352	1				I
	2035	2400	CULG							2122.5						IIIB,W
			CULG							2358.5		1				IIIB
26	0000	0734	CULG				0000	0049.5	1	0019	0506	1				I
			CULG							0004.5	0603.5					IIIN,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1973

JUN. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
26	0000	0230	BOUL							0010.5	0011.6	1	0010.5	0011.6	1	III
			BOUL							0011.6	0037.4	1	0011.6	0037.4	1	CONT
			CULG							0040.5	0041.5	1				IIIG
	0000	0146	HARV				0135	0145	3	0136	0145	3	0139	0140	3	IV
			CULG	0136	0149	1	0134	0225	2	0135.5	0415	2				IV
			CULG							0137	0142	2	0138.5	0140.5	1	IIIG,V
			BOUL							0137.0	0144.2	3	0137.0	0144.2	3	IIIG
			BOUL										0139.0	0143.7	2	II
			BOUL							0143.0	0217.8	1	0143.0	0217.8	1	IV
			BOUL							0146.2	0151.3	3	0147.0	0158.0	3	IIF
			BOUL							0146.8	0159.0	3	0154.0	2000.8	3	IIH
			BOUL							0200.5	0205.0	2	0200.5	0205.0	2	IIF
			BOUL							0201.5	0206.3	2				IIH
			CULG							0632	0634.5	2				IIIGG
	0340	1051	WEIS							0633.0	0633.3	1				IIIB
	1059	1315	WEIS							1043.9	1044.1	1				IIIB
	0908	2420	SGMR										1043.9	1044.2	1	III
	1130	2400	BOUL							1423.0	1423.6	1	1423.0	1423.6	1	IIIG
			BOUL							1510.8	1512.7	2	1510.8	1512.7	2	IIIG
	1217	2400	HARV							1511	1514	1	1511	1514	1	IIIG
			SGMR										1511.0	1514.3	2	IIIG
			BOUL							1514.0	1514.2	1	1514.0	1514.2	1	III
			BOUL							1524.4	1525.1	1	1524.4	1525.1	1	III
			BOUL										1742.6	1742.8	1	III
			BOUL										1916.1	1916.5	1	III
	2035	2400	CULG													
27	0000	0146	HARV													
	0000	0734	CULG							0004	0005					IIIG,W
			CULG							0009	0047.5	1				I
			CULG				0043.5	0044.5	1	0043.5	0045	1				IIIG
	0000	0230	BOUL							0043.9	0044.4	1	0043.9	0044.4	1	III
			CULG							0048	0049	1				IIIG
			BOUL							0048.0	0048.6	1	0048.0	0048.6	1	IIIG
			CULG				0215.5		1							IIIB
			CULG							0218	0218.5	1				IIIG
			CULG				0223	0224.5	1							IIIG
			CULG							0245.5	0247.5					IIIG,W
	0340	0350	WEIS													
			CULG				0538	0539.5	1	0537	0541	2				IIIGG,U,V
			CULG							0541.5	0544.5	1				IIIGG
			CULG				0545	0545.5	1	0544	0546	1				IIIGG
			CULG							0546	0548	1				IIIG
			CULG							0553	0701.5	1				I
	0652	1316	WEIS													
	0913	2420	SGMR													
	1216	2400	HARV													
	1130	2400	BOUL							2027.0	2027.3	1	2027.0	2027.3	1	III
	2035	2400	CULG							2151	2252	1				I
			CULG							2203.5	2205	1				IIIG
			BOUL							2203.8	2204.9	1	2203.8	2204.9	1	IIIG
28	0000	0230	BOUL													
	0000	0146	HARV													
	0000	0735	CULG							0010.5	0155	1				I
	0340	1142	WEIS													
	1145	1315	WEIS													
	1217	2400	HARV				1859	1901	2							IIIGG
	1130	2400	BOUL							1911.6	2000.0	1				IS
			BOUL							1952.0	1954.3	1	1952.0	1954.3	1	IIIG
	0913	2420	SGMR										1953.2	1954.1	1	III
	2035	2400	CULG				2200.5		1							IIIG
			CULG							2314.5	2315.5	1				IIIG
			CULG				2319.5	2321.5	1							IIIGG
			HARV				2320	2321	2	2320	2321	2				IIIGG
			HARV				2323	2329	1	2328	2329	1	2328	2329	1	IIIGG
			CULG				2323	2330	1	2326	2330	2				IIIGG,V
			BOUL							2326.2	2330.0	3	2326.2	2330.0	3	IIIGG
			SGMR										2327.9	2328.3	1	III
29	0000	0735	CULG							0046.5	0708	1				IS
			CULG							0047		1				IIIB
	0000	0146	HARV							0140	0142	1				IIIG
	0000	0230	BOUL							0140.0	0143.1	2	0140.0	0143.1	2	IIIG
			CULG				0141	0142.5	1	0139.5	0143	1				IIIG,U
			CULG				0145.5	0159	1	0153	0158	1				IV
			BOUL							0146.1	0147.5	2	0146.1	0147.5	2	IIIG
			CULG				0147	0148.5	1	0144.5	0151	2				IIIGG,V
			BOUL							0147.8	0150.2	3	0147.8	0150.2	3	IIIG
			BOUL							0151.1	0151.2	2	0151.1	0151.2	2	III
			BOUL							0153.0	0153.0	1	0153.0	0153.0	1	III
			CULG				0208	0209	1							IIIG
			CULG				0216		1							IIIG
			CULG							0219	0220	1				IIIG
			CULG							0305						IIIB,W
			CULG				0309		1							IIIB
			CULG							0317.5	0318.5	1				IIIG
			CULG				0551	0552.5	1							IIIG
			CULG				0556.5	0601.5	1	0556.5	0601.5	1				IIIG
			CULG				0624.5	0625	1	0624.5	0625	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1973

JUN. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
29	0343	1919	WEIS							0804.2	0804.8	1				IIIG
			WEIS							0806.7-	0807.2	1				UNCLF
			WEIS							0949.6	0950.5	1				IIIG
			WEIS							1022.1	1022.2	1				IIIG
			WEIS							1026.8	1026.9	2				IIIB
			WEIS							1040.4	1040.9	3				IIIG
	0913	1556	SGMR										1040.7	1041.0	1	III
			WEIS							1307.7	1311.7	2				IIIGG
	1216	2400	HARV				1308	1312	2	1308	1312	2				IIIGG
	1130	2400	BOUL							1308.4	1312.8	3	1308.4	1312.8	3	IIIG
			SGMR										1308.8	1311.9	3	IIIG
			HARV				1326		1	1325	1326	1	1326		1	IIIG
			BOUL							1326.0	1326.6	2	1326.0	1326.6	2	III
			SGMR										1326.1	1326.4	2	III
			BOUL							1508.6	1508.7	1				III
			HARV				1513	1517	3	1513	1518	3	1514	1518	3	IIIGG,V
			WEIS							1513.5	1520.5	3				IIIGG,V
			SGMR										1513.7	1521.2	3	V
			HARV							1519	1522	1				UNCLF
			BOUL							1521	1524.6	2				II
			BOUL							1526.1	1526.7	1				III
			BOUL										1605.9	1606.3	1	III
			BOUL										1608.5	1609.0	1	III
			BOUL							1616.9	1617.9	2	1616.9	1617.9	2	III
			BOUL							1650.8	1652.0	2	1650.8	1652.0	2	III
			WEIS							1650.9	1651.1	1				IIIB
	1645	2420	SGMR										1651.0	1651.6	2	III
			BOUL							1710.9	1711.0	1	1710.9	1711.0	1	III
			BOUL							1723.8	1724.0	1				III
			HARV							1900	1901	1	1900	1901	1	IIIG,U
			BOUL							1900.0	1906.6	2	1900.0	1906.6	2	IIIG
			SGMR										1900.1	1900.9	1	III
			HARV				1907	1910	2	1907	1911	3	1907	1911	3	IIIGG,V
			BOUL							1907.6	1912.5	3	1907.6	1912.5	3	IIIGG
			SGMR										1907.8	1911.3	2	IIIG
			HARV							1910.8	1915	3				II
			BOUL							1911.1	1914.3	2				II
			BOUL							1917.0	1919.3	1				II
			HARV				1947	1949	2							IIIGG,V
			HARV				1947	1949	3							UNCL
	2035	2400	CULG				2100	2400	1	2100	2400	1				CONT
			CULG							2113	2400	1				I
			CULG				2115.5	2121	1	2115.5	2121	2				IIIGG
			BOUL							2115.6	2115.9	1	2115.6	2115.9	1	III
			HARV				2117	2119	2	2117	2120	2	2117	2120	2	IIIGG
			BOUL							2117.4	2119.9	3	2117.4	2119.9	3	IIIGG
			SGMR										2118.1	2119.9	1	IIIG
			CULG							2123	2125					IIIG,W
			CULG							2128	2129.5	1				IIIG
			CULG							2130.5	2133	1				IIIG
			SGMR										2131.9	2132.2	1	III
			BOUL							2131.9	2132.5	2	2131.9	2132.5	2	IIIG
			CULG				2135.5	2136	1	2135.5	2136	2				IIIG
			CULG							2210.5	2349.5	1				IIIN
			CULG							2232.5	2234.5	1				IIIG
			BOUL							2233.5	2234.2	1	2233.5	2234.2	1	IIIG
			CULG							2237	2237.5	1				IIIG
			CULG							2240.5	2241.5	1				IIIG,V
			BOUL							2240.6	2241.2	1	2240.6	2241.2	1	III
			CULG							2241.5	2245.5	1				IIIG
			BOUL							2242.0	2242.2	1				III
			BOUL							2243.1	2243.9	1				IIIG
			CULG							2339.5		1				IIIB
			CULG							2341	2342	1				IIIG
30	0000	0735	CULG				0005	0704	1	0000	0624	1				I
			CULG							0009.5	0654	1				IIIN
			CULG							0029	0030	1				IIIG
			CULG							0039	0041.5	1				IIIG
	0000	0230	BOUL							0046.8	0054.0	3	0046.8	0054.0	3	IIIGG
			CULG				0049	0054	1	0046	0059.5	2				IIIGG,U
	0000	0146	HARV				0049	0052	1	0047	0053	2				IIIGG
			CULG							0202.5	0205.5	1				IIIG
	0344	1832	WEIS													
			CULG							0403.5	0405.5	2	0404	0405	1	IIIGG,V
			CULG							0438.5	0440.5	2	0439	0440.5	1	IIIGG,V
			CULG							0626.5	0629	1				IIIG
	0914	2420	SGMR													
	1130	2400	BOUL							1253.7	1258.9	1				III
			BOUL										1448.8	1449.0	1	III
	1247	2400	HARV				1516	1519	2							I
			BOUL										1520.6	1520.7	1	III
			BOUL										1523.2	1523.3	1	III
			BOUL										1554.6	1554.9	1	III
			BOUL										1703.4	1703.6	1	III
			BOUL										1723.1	1723.3	1	III
	1646	1320	WEIS													
			BOUL							1943.2	1943.8	1	1943.2	1943.8	1	III
			BOUL										1948.7	1948.9	1	III
	2035	2130	CULG													

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1973

JUN. 1973	TIMES OF OBSERVATION		STATION	EVENTS													SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.		
30	2144	2400	CULG							2146.5	2347	1					IIIN
			CULG							2210.5	2333	1					I
			CULG				2246.5		1								FAST DRIFT
			CULG				2254.5	2255.5	1	2254.5	2255	1					IIIG
			CULG				2302	2303	1								IIIG
			CULG				2344	2345	1								IIIG

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III
RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

Note: Beginning in May the frequency coverage at the Harvard Radio Astronomy Station, Fort Davis, Texas, has been extended from 10-2000 MHz to 10-4000 MHz.

SELECTED SOLAR EVENTS

JUNE 1973

Culgoora

UT Date 1973 JUNE	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polarization	Intensity (1-3)		
				Central Dist. ($R_\odot$)	Position Angle (Deg.)				
10	0056	0105	(80 (160	1.6 1.2	45) 45)	0	2	II	
	0419	0421	(80 (160	1.6 1.2	45) 45)	0	2	IIIG,V	*
16	0256	0304	(80 (160	1.0 0.8	70) 90)	0	1-2	IIIG	
17	0133	0134	(80 (160	0 0.4	-) 150)	0	2	IIIG	*
26	2335	0134	160	1.0	240	0	1-2	I	
	0135	0148	(160 (80	1.0 1.0	240) 220)	0	3	II	Complex Structure
	0200	0430	(160 (80	1.3 1.6	240 240	0 variable	1 1	IVS IVS	pol.changes from l to r progressively
29	0141	0152	160 80	(1.1 (0.8 (1.1 (1.1	130) 250) 130) 260)	0	2-3	IIIGG,V,U	*

Days without Heliograph observations: .....

* Other similar events during day.

COSMIC RAY INDICES

(Neutron Monitors)

JUNE 1973

June 1973	THULE DAILY AVERAGE COUNTS PER HOUR	DEEP RIVER DAILY AVERAGE COUNTS PER HOUR	CALGARY DAILY AVERAGE COUNTS PER HOUR	SULPHUR MT. DAILY AVERAGE COUNTS PER HOUR	CLIMAX DAILY AVERAGE COUNTS PER HOUR	DALLAS DAILY AVERAGE COUNTS PER HOUR
1	4541.2	Data not available at time of publication.	11682.3	8674.6	Data not available at time of publication.	6263.9
2	4535.0		11672.2	8682.6		6254.8
3	4515.5		11629.7	8598.1		6244.3
4	4513.8		11657.9	8616.1		6245.5
5	4488.3		11622.2	8663.3		6222.5
6	4497.2		11633.5	8701.4		6245.2
7	4503.2		11660.3	8716.6		6264.0
8	4506.6		11701.0	8756.9		6284.3
9	4512.1		11692.7	8740.3		6263.0
10	4513.4		11708.3	8753.0		6275.3
11	4501.1		11633.9	8674.1		6247.1
12	4489.4		11594.6	8651.3		6222.7
13	4483.8		11546.5	8635.1		6205.4
14	4461.7		11518.2	8639.6		6194.4
15	4473.8		11442.2	8622.6		6191.5
16	4481.9		11513.0	8627.4		6186.3
17	4485.2		11539.8	8646.5		6182.8
18	4463.7		11425.4	8526.3		6181.7
19	4470.9		11504.3	8582.2		6204.6
20	4491.4		11569.0	8626.6		6209.8
21	4524.7		11590.5	8637.1		6219.8
22	4537.8		11602.0	8674.1		6227.3
23	4526.8		11619.7	8702.2		6234.8
24	4506.8		11613.0	8679.8		6262.2
25	4503.8		11604.9	8666.0		6208.2
26	4531.7		11684.0	8719.3		6228.7
27	4576.9		11770.8	8782.0		6257.2
28	4600.8		11826.2	8847.0		6297.1
29	4583.8		11783.0	8817.6		6310.7
30	4549.0		11711.8	8776.2		6262.4

( ) Number of hours for which data are available if less than 24 (or number of section hours if less than 40 for Climax).

Churchill and Dallas Super Neutron Monitors, Scaling Factors 120.

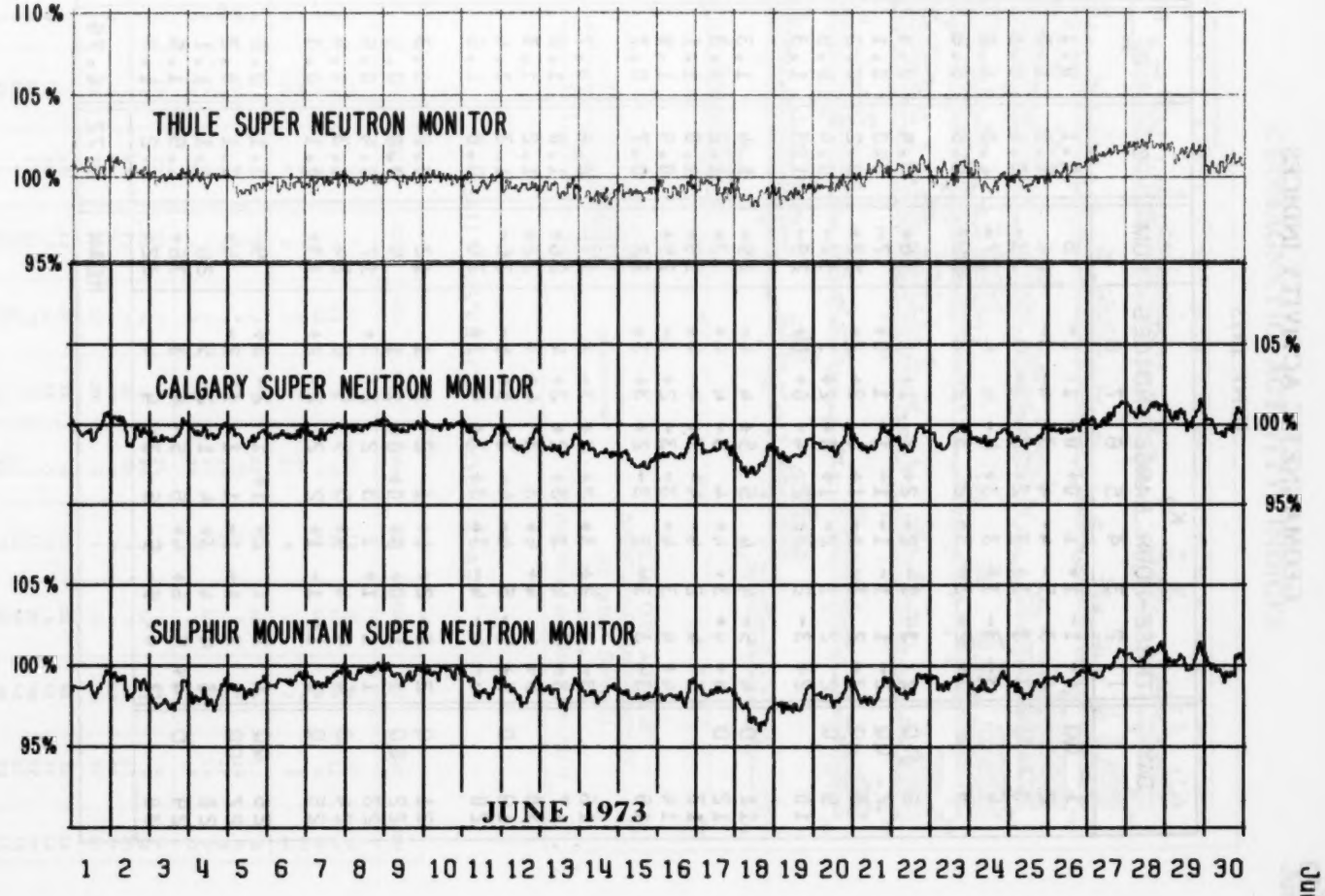
Deep River Super Neutron Monitor, Scaling Factor 300.

Thule, Calgary and Sulphur Mountain Super Neutron Monitors, Scaling Factors 100.

Climax IGC Station B305, Scaling Factor 100.

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

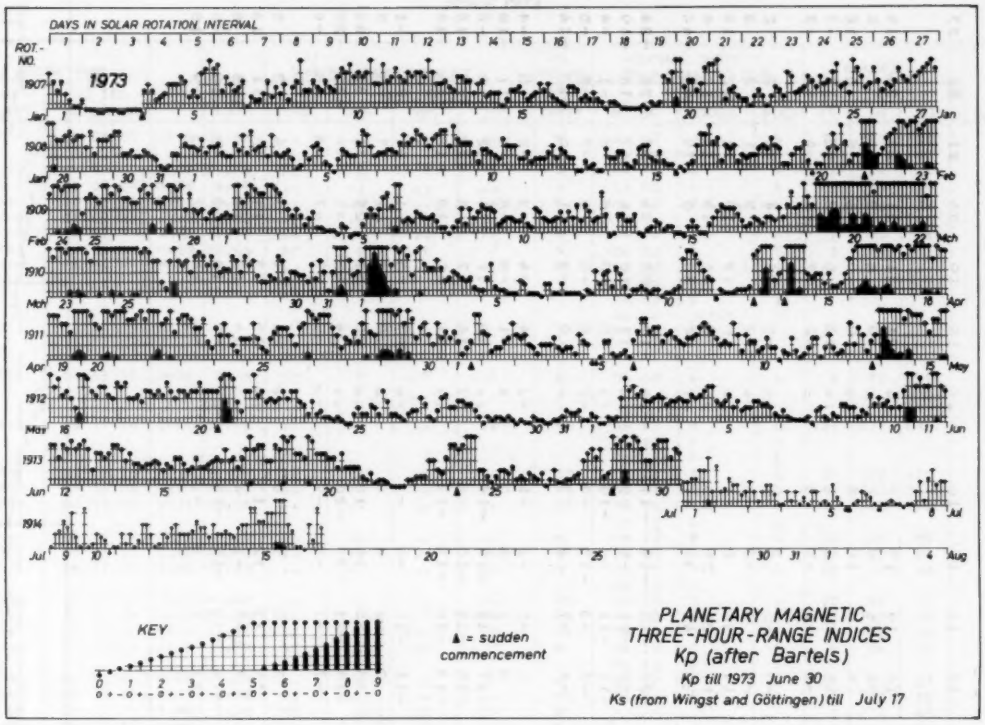


GEOMAGNETIC ACTIVITY INDICES

JUNE 1973

DAY		K_p THREE-HOUR RANGE INDICES 1	2	3	4	5	6	7	8	SUM	C_i	C_p	A_p
1	QQ	1-	1-	1+	1	0+	0+	1	1-	6	0.1	0.1	3
2		1	3	5-	4-	4	3+	4-	3-	26	1.1	1.0	20
3		3-	3	3+	3	2+	3-	3-	3	23-	0.6	0.8	14
4		3-	3-	3+	3	3+	4-	4	4	27-	1.0	1.0	19
5		3-	2+	3-	3+	2	3-	2-	2	19+	0.5	0.6	10
6	Q	2	3-	3-	2+	2+	2	1+	1	16+	0.4	0.4	8
7	QQ	2-	1	1-	1-	1-	1-	1	0+	7-	0.0	0.1	4
8	Q	2-	2	1	1-	1+	1	2+	2+	12+	0.2	0.3	6
9	Q	2	2	1	2-	1+	3+	2+	3	17-	0.4	0.5	9
10		2+	3-	2	3+	2	4-	6+	6+	29-	1.3	1.3	33
11	D	4	5-	4	4	5	5+	4	4-	35-	1.4	1.3	34
12	D	4+	4+	3+	4+	4	5-	4	4+	33+	1.2	1.3	30
13		5-	4	2	4-	4-	3+	4-	4+	29+	1.0	1.1	24
14		4+	4	3	4-	3-	3-	2+	3-	25+	0.9	1.0	18
15		3-	3	3-	2	3-	2+	3+	3+	22	0.7	0.7	13
16		3-	2	2+	3+	2+	2+	3-	3	21-	0.6	0.7	11
17		3+	3	4	3	3+	2+	3+	4	26+	1.0	1.0	18
18		5+	4	4+	4+	3	3	4+	4	32+	1.2	1.3	30
19	D	5+	5-	5	4-	4-	3+	5+	5-	36-	1.3	1.4	38
20		4-	4-	4-	3+	3+	2+	4-	2+	26	0.8	1.0	18
21	Q	2+	2+	2+	1+	1	2-	1-	1	13-	0.2	0.3	6
22	QQ	1	1-	0+	0+	0+	0+	1	1	5	0.0	0.1	3
23		1+	1+	1+	3	3	2	2-	3+	17	0.4	0.5	10
24	D	4+	4+	4	4+	5	5	5	2	34	1.3	1.4	34
25	Q	2	1+	1-	1+	2	2	2-	2+	13+	0.1	0.3	6
26	QQ	1	1+	1	2-	1+	1	2-	0+	9+	0.1	0.2	4
27	QQ	1	2	1-	1-	1	1	1+	2-	9+	0.1	0.2	4
28		3	4-	4	3+	4	1+	2-	5	26	1.1	1.1	21
29	D	4+	5-	6+	4+	5	5-	4	3	36+	1.5	1.5	41
30		3	4+	5-	5-	5-	3+	4	4-	32+	1.2	1.3	29
										MEAN	0.72	0.79	17

GEOMAGNETIC ACTIVITY INDICES



DAILY AVERAGE INDICES Ap

DAY	1972 JUL	AUG	SEP	OCT	NOV	DEC	1973 JAN	FEB	MAR	APR	MAY	JUN
1	5	10	5	7	98	6	11	17	22	91	17	3
2	7	5	6	5	42	5	2	14	40	54	12	28
3	7	5	5	4	13	6	2	16	14	26	9	14
4	4	132	6	7	6	4	11	7	4	9	8	19
5	3	182	5	2	3	2	21	9	6	7	5	10
6	4	87	10	2	7	3	20	15	28	4	13	8
7	10	20	5	8	7	10	8	14	8	4	16	4
8	10	9	9	4	7	6	15	25	7	8	17	6
9	6	74	8	4	7	4	16	21	11	7	12	9
10	7	18	15	6	4	2	28	11	8	4	7	33
11	6	17	11	19	7	3	24	8	8	24	6	34
12	7	7	5	21	6	8	25	9	14	3	7	30
13	3	5	53	21	4	30	16	4	5	46	20	24
14	3	9	54	26	4	9	8	7	4	57	80	18
15	6	10	24	8	17	29	9	8	3	9	37	13
16	8	6	19	12	31	33	8	10	12	60	32	11
17	8	5	26	2	12	13	5	16	6	51	27	18
18	5	13	14	11	9	8	3	11	20	46	22	30
19	8	14	6	34	11	7	10	10	82	42	21	38
20	5	15	4	14	27	4	29	9	80	46	23	18
21	3	15	2	16	9	2	22	49	58	42	46	6
22	10	8	4	13	13	14	5	46	53	44	20	3
23	10	3	13	18	11	30	13	48	50	25	15	10
24	17	2	16	11	5	13	22	54	49	14	4	34
25	33	5	6	6	8	4	20	31	50	14	6	6
26	17	18	7	8	14	5	20	34	32	28	8	4
27	9	25	8	7	11	2	33	44	28	26	10	4
28	5	8	8	11	12	4	33	20	22	26	8	21
29	4	5	25	21	9	15	22		16	59	3	41
30	4	6	8	20	4	19	15		15	18	3	29
31	6	7		29		13	6		33		4	
MEAN	8	24	13	12	14	10	16	20	25	30	17	17

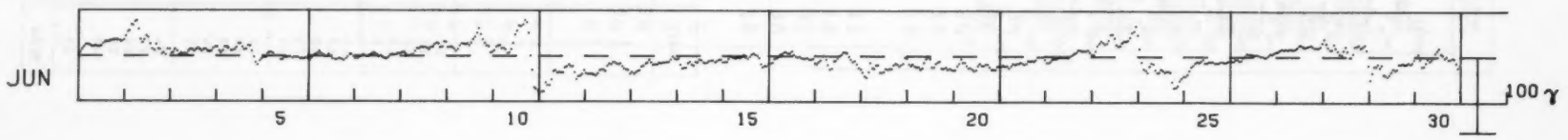
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

JUNE 1973

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	5	9	12	15	15	14	12	12	13	12	12	13	16	19	19	19	20	21	21	21	21	20	19	21
2	26	32	33	41	40	45	46	35	21	17	21	26	24	15	9	7	15	9	8	2	4	1	9	9
3	3	5	9	6	1	4	2	3	2	6	9	8	6	9	10	8	5	9	9	6	5	6	10	12
4	12	6	4	7	12	12	10	7	7	8	11	16	16	11	8	9	14	13	6	-2	-9	-12	-7	-4
5	-2	-2	3	5	5	3	0	0	0	-5	-5	-2	-2	-1	-1	-3	-6	-2	-2	-4	-4	-4	-3	-4
6	-5	-3	0	2	3	6	3	1	-1	-1	2	-1	-4	-5	-5	-4	-4	-5	-6	-4	-1	2	2	-1
7	-4	-4	-2	0	1	0	-1	0	2	4	3	1	-1	0	-2	-3	-4	-2	1	2	1	2	3	3
8	5	5	2	0	0	1	2	6	10	10	12	11	11	10	8	11	12	15	17	16	11	12	19	18
9	11	12	11	9	6	9	13	16	16	15	16	13	17	22	25	30	30	28	21	16	13	12	4	5
10	7	12	13	14	10	10	8	3	4	9	17	28	33	40	39	41	47	44	30	0	-19	-42	-44	-46
11	-49	-47	-47	-35	-39	-39	-31	-20	-19	-22	-21	-22	-22	-15	-14	-11	-14	-14	-22	-31	-27	-26	-24	-19
12	-23	-24	-24	-24	-25	-26	-23	-19	-18	-18	-20	-13	-10	-11	-8	-8	-10	-11	-10	-14	-17	-18	-19	-24
13	-21	-24	-22	-20	-19	-14	-13	-10	-9	-5	-9	-12	-11	-11	-9	-10	-9	-9	-8	-8	-5	-1	-4	-5
14	-4	-12	-17	-16	-16	-10	-8	-12	-13	-8	-9	-5	-6	-9	-10	-9	-7	-6	-6	-9	-7	-5	-5	-9
15	-8	-8	-4	0	-2	-3	-3	-2	-3	-1	1	-2	-4	-1	2	3	1	0	-3	-11	-15	-13	-14	-11
16	-10	-9	-4	-3	-1	2	3	5	5	3	4	6	1	-1	-2	-1	-3	-4	-4	-3	-5	-5	-4	-10
17	-11	-8	-6	0	0	-5	-12	-18	-17	-7	-6	-3	0	2	5	5	4	-1	-5	-8	-7	-11	-16	-18
18	-22	-27	-29	-21	-9	-16	-17	-12	-12	-22	-22	-21	-17	-18	-17	-17	-12	-10	-11	-14	-12	-10	-2	-3
19	-11	-13	-11	-14	-15	-15	-18	-16	-9	-4	-1	-4	-15	-15	-10	-8	-7	-16	-17	-15	-18	-17	-18	-19
20	-19	-13	-10	-4	-9	-9	-13	-16	-16	-18	-20	-19	-13	-10	-13	-13	-11	-11	-15	-18	-18	-18	-14	-13
21	-14	-12	-14	-13	-16	-13	-10	-11	-10	-10	-8	-10	-11	-10	-6	-7	-6	-7	-5	-1	-1	-1	-1	-5
22	-9	-9	-7	-4	-3	-3	-2	-1	-1	-1	-2	-2	0	2	4	5	6	8	7	7	7	8	5	2
23	2	7	14	17	20	18	16	17	21	29	29	24	15	13	14	18	20	20	21	25	31	33	40	28
24	10	-8	-17	-19	-22	-13	-9	-10	-18	-22	-21	-17	-19	-21	-20	-20	-21	-34	-42	-41	-39	-32	-29	-26
25	-26	-24	-19	-14	-12	-9	-7	-8	-6	-4	-9	-9	-7	-7	-7	-9	-9	-9	-7	-7	-8	-8	-6	-6
26	-6	-6	-4	-4	-6	-5	-1	1	4	3	3	2	2	2	1	0	0	-1	-1	1	4	3	5	6
27	7	9	10	9	10	9	10	10	9	10	12	15	15	13	12	13	14	15	13	11	12	11	13	18
28	23	17	12	9	9	16	11	7	3	2	8	13	7	-1	-1	4	13	14	15	11	13	15	8	-12
29	-31	-22	-13	-13	-10	-15	-11	-24	-25	-27	-24	-20	-16	-18	-17	-10	-10	-9	-10	-10	-8	-10	-8	-4
30	0	3	-4	-13	-13	-8	-3	-6	-4	-1	5	8	11	4	2	-2	0	-4	-4	-2	-3	-9	-15	-11



PRINCIPAL MAGNETIC STORMS

JUNE 1973

DATE 1973 MO. DA.	STORM TIME UT START	STORM TIME UT END MO. DA. HR	OBS.	GEO-MAG. LAT.	SUDDEN COMMENCEMENT TYPE	AMPLITUDES D(°)	AMPLITUDES H(γ)	AMPLITUDES Z(γ)	C FIGURE DEGREE OF ACTIVITY	MAXIMAL ACTIVITY ON K-SCALE 0 TO 9 MO. DA.	3-HOUR PERIOD	K INDEX	RANGES D (°)	RANGES H (γ)	RANGES Z (γ)	STORM NUMBERS
06 02	00--	06 06 05	NEWP	55.1N	..	..	..	..	M	06 02	3	5	25	103	96	30
										06 04	3					30
	0332	-- -- --	MBOR	21.3N	SC	0	+ 8	0	-	-- --	-	-	--	--	--	30
	02--	06 02 23	ALIB	9.5N	..	..	..	..	M	06 02	5	5	5	139	39	30
	0040	06 03 16	HYDE	7.6N	..	..	..	..	M	06 02	3,4,5,6	4	6	154	34	30
	02--	06 02 23	TVAN	1.1S	..	..	..	..	M	-- --	-	-	3	216	136	30
	02--	06 02 23	ANNA	1.5S	..	..	..	..	M	-- --	-	-	3	--	54	30
	0332	07 03 00	PMOR	18.6S	SC	0	+ 5	+ 7	M	06 02	3	5	3	100	50	30
	00--	06 04 --	KGLN	57.3S	..	..	..	..	M	06 02	3,4,5	3	--	--	--	30
										06 02	6,7					30
										06 03	8	3				30
										06 04	3,5,6	3				30
										06 04	7,8					30
06 04	0525	06 05 18	HYDE	7.6N	SC	0	+ 7	- 2	M	06 05	4	4	4	71	29	31
06 10	06--	06 13 16	COLL	64.6N	..	..	..	..	MS	06 11	3	6	114	970	670	32
										06 12	4	6				32
										06 13	4	6				32
	10--	06 14 13	SITK	60.0N	..	..	..	..	MS	06 11	3	6	50	310	410	32
	10--	06 16 03	NEWP	55.1N	..	..	..	..	MS	06 11	3	6	41	207	204	32
	15--	06 14 04	WITT	54.1N	..	..	..	..	MS	06 10	7,8	6	30	185	100	32
										06 11	6	6				32
	15--	06 14 04	FRED	49.6N	..	..	..	..	M	06 10	8	5	22	180	95	32
	15--	06 14 15	BOUL	49.0N	..	..	..	..	M	06 11	3	5	26	145	85	32
	10--	06 11 21	IRKU	40.8N	..	..	..	..	M	06 10	7,8	5	20	177	48	32
										06 11	5	5				32
	1040	06 14 05	TUCS	40.4N	..	..	..	..	MS	06 10	7	6	20	90	40	32
	1042	06 11 24	SJUA	29.9N	SC	+ 0.5	+17	+04	MS	06 10	7	6	12	147	28	32
	1041	06 14 06	MBOR	21.3N	SC	+ 0.9	+30	0	MS	06 10	7	6	4	108	36	32
	1040	06 11 21	ALIB	9.5N	SC	- 0.7	26	- 7	M	06 10	7	5	8	94	55	32
										06 11	6	5				32
	1040	06 13 06	HYDE	7.6N	..	..	..	..	M	06 10	7	5	7	95	27	32
	1041	06 12 17	GUAM	4.0N	..	..	..	..	MS	06 10	8	6	0	120	30	32
	1040	06 11 21	TVAN	1.1S	SC	0.0	23	30	M	-- --	-	-	5	136	95	32
	1040	06 11 21	ANNA	1.5S	SC	- 1.0	29	15	M	-- --	-	-	5	101	59	32
	1041	06 14 19	APIA	16.1S	SC	0	+25	- 8	M	06 10	7	5	6	291	65	32
	1041	07 13 15	PMOR	18.6S	SC	0	+20	+16	M	06 10	7	5	7	100	40	32
	15--	06 13 06	HRMN	33.3S	..	..	..	..	M	06 10	7	5				32
										06 12	1	5	29	99	139	32
										06 13	1	5				32
	18--	06 13 21	GNAN	43.2S	..	..	..	..	MS	06 10	7	6	15	140	110	32
	10--	06 13 --	KGLN	57.3S	..	..	..	..	MS	06 10	7,8	6	--	--	--	32
06 16	19--	06 21 07	NEWP	55.1N	..	..	..	..	M	06 18	1,2,3	5	32	171	274	33
										06 19	1,2,3,8					33
										06 20	2					33
06 17	04--	06 20 16	COLL	64.6N	..	..	..	..	MS	06 17	3,4,5	6	153	1210	630	33
										06 19	1	6				33
										06 20	4	6				33
	04--	06 21 11	SITK	60.0N	..	..	..	..	MS	06 18	1	6	60	490	380	33
	19--	06 19 24	WITT	54.1N	..	..	..	..	MS	06 19	7	6	25	205	70	33
	19--	06 20 07	FRED	49.6N	..	..	..	..	M	06 18	1	5	32	90	65	33
	21--	06 21 09	BOUL	49.0N	..	..	..	..	M	06 18	1	5	25	105	95	33
	21--	06 20 07	TUCS	40.4N	..	..	..	..	M	06 18	1,2	5	13	120	20	33
										06 19	1	5				33
	1400	06 20 15	HYDE	7.6N	..	..	..	..	M	06 18	1,2,3,7	4	6	74	29	33
										06 19	3,7,8	4				33
	21--	06 20 10	HRMN	33.3S	..	..	..	..	M	06 19	1	5	23	79	73	33
	21--	06 20 15	GNAN	43.2S	..	..	..	..	M	06 18	7	5	16	90	90	33
										06 19	7,8	5				33
	19--	06 20 --	KGLN	57.3S	..	..	..	..	M	06 18	1,7	5	--	--	--	33
										06 19	1,7,8	5				33
06 23	22--	06 24 21	COLL	64.6N	..	..	..	..	MS	06 24	6	7	269	1910	1090	34
	22--	06 25 02	SITK	60.0N	..	..	..	..	MS	06 24	5	7	40	800	560	34
	2209	06 25 02	NEWP	55.1N	SC *	2	18	--	M	06 24	1,2	5	26	166	223	34
	0700	06 24 22	HYDE	7.6N	..	..	..	..	M	06 23	8	4	8	144	16	34
										06 24	1	4				34
	22--	06 24 21	HRMN	33.3S	..	..	..	..	M	06 24	6,7	5	16	111	69	34
06 24	0008	06 24 22	KGLN	57.3S	..	..	..	..	M	06 24	1	5	--	--	--	34
06 27	22--	07 01 21	MBOR	21.3N	..	..	..	..	M	06 28	8	5	2	57	14	35
	2330	07 01 20	HYDE	7.6N	..	..	..	..	M	06 29	3	5	7	116	28	35
	2323	07 30 20	PMOR	18.6S	SC	0	+11	+ 9	MS	06 29	3	6	4	160	70	35
06 28	23--	07 01 22	COLL	64.6N	..	..	..	..	MS	06 30	4	7	197	1730	910	35
	01--	07 02 15	SITK	60.0N	..	..	..	..	MS	06 29	4	7	100	740	540	35
	0106	07 02 13	NEWP	55.1N	SC *	2	36	6	MS	06 29	3	7	50	180	223	35
	22--	07 01 19	WITT	54.1N	..	..	..	..	MS	06 29	3	6	20	260	80	35

PRINCIPAL MAGNETIC STORMS

JUNE 1973

DATE 1973 MO DA	STORM TIME UT START	STORM TIME UT END MO DA HR	OBS	GEO-MAG LAT.	SUDDEN COMMENCEMENT TYPE	AMPLITUDES D(')	AMPLITUDES H(γ)	AMPLITUDES Z(γ)	C FIGURE DEGREE OF ACTIVITY	MAXIMAL ACTIVITY ON K-SCALE 0 TO 9 MO DA	3-HOUR PERIOD	K INDEX	RANGES D (')	RANGES H (γ)	RANGES Z (γ)	STORM NUMBERS
06 28	21--	07 01 20	FRED	49.6N	..	..	..	..	M	06 29	3	5	24	125	95	35
	21--	07 02 15	BOUL	49.0N	..	..	..	..	MS	06 29	3	6	26	145	70	35
	23--	06 30 24	IRKU	40.8N	..	..	..	..	MS	06 29	3,4	6	20	137	52	35
	23--	07 01 10	TUCS	40.4N	..	..	..	..	MS	06 29	3	6	14	130	15	35
	2030	06 29 12	SJUA	29.9N	..	..	..	..	M	06 28	8	5	08	75	19	35
	2139	06 29 17	GUAM	4.0N	..	..	..	..	M	06 29	3	5	0	100	20	35
	20--	06 29 20	HRMN	33.3S	..	..	..	..	M	06 28	8	5				35
										06 29	2,3	5	23	71	78	35
	22--	07 01 21	GNAN	43.2S	..	..	..	..	MS	06 29	3	6	21	70	90	35
	22--	06 30 --	KGLN	57.3S	..	..	..	..	M	06 28	8	5	--	--	--	35
										06 29	3	5				35
										06 30	7	5				35

Reports were received from the following observatories:

College Witteveen Fredericksburg Irkutsk San Juan Alibag Guam Trivandrum Port Moresby Gnangara
Sitka Newport Boulder Tucson M'Bour Hyderabad Annamalainagar Apia Hermanus Port-aux-Francais

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

JUNE 1973

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romana)

The meaning of the station symbols is given in the IAGA-Bulletins nr. 12 and 32. Times of ssc, si and bay-commencements are mean values. If given by ten or more stations they are underlined.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

02 0335 B: TI KS PM; C: VI SZ PP

10 1042 A: LG KS; B: MA CI PE KA TI SZ PM HU PP LM; C: WN IK EB AE SS; (si: B: FU - b: A: VI - sfe: C: TL)

Sudden impulses found in the magnetograms (si)

None

Rapid variations in form of bays (b, bs, bp, bps)

09 2104 bp: A: LG PE; B: WI MA DB FU EB TL LM - bps: B: SO

19 1905 b: A: AE - bs: A: KS - bp: A: EB PE; B: WN MA KG - bps: A: LG LM; B: DO IK (ssc: B: SO)

20 1819 bs: A: SO - bp: A: PE; B: WN WI MA IK EB TL TI; C: NI - bps: A: LG

25 2207 bp: A: CI PE; B: SO WN WI MA DB TL LM; C: EB - (ssc: B: LG)

Giant pulsations (pg)

02	0705 - 0745	FU	19	0625 - 0945	WN MA DB EB?
02	0910 - 0930	FU	24	0702 - 1715	FU
17	1239 - 1300	FU PE	29	1605 - 1640	SI

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

01	1007 - 1021	NI MA EB?	17	1239 - 1249	SZ (si: A: LG)
09	1619 - 1656	SZ (bp: B: TI)	21	0703 - 0707	MA (si: C: LM)
14	1128 - 1154	SZ	24	1445 - 1516	NI
15	0828 - 0838	SZ	24	1750 - 1810	LG (si: A: TI; B: TL HU - bs: B: PE - bp: B: MA)
15	1405 - 1427	SZ			
16	1311 - 1319	SZ	28	1300 - 1328	NI

RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

JUNE 1973

North Atlantic

JUN. 1973	WHOLE DAY INDICES NORTH ATLANTIC	ADVANCE FORECASTS (JC-REPORTS) FOR WHOLE DAY	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES 00 TO 06	06 TO 12	12 TO 18	18 TO 24	SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF 02	08	14	20	GEOMAGNETIC INDICES K_{FR} HALF DAY (1)	(2)	A_{FR} OBSERVED
01	7-	7	7-	7-	7-	6+	6	6	7	7	1	1	3
02	6+	7	7-	6+	6+	6+	7	7	6	6	3	3	15
03	6+	6	7-	6-	7-	7-	7	5	6	6	3	2	13
04	6+	6	7-	6+	7-	6o	6	6	6	6	3	(4)	16
05	6o	6	6o	6-	6o	6o	6	6	6	6	3	2	10
06	6o	6	6+	6+	6-	6o	6	6	6	6	3	2	9
07	6+	6	6o	6+	7-	7-	6	6	6	7	1	1	3
08	7-	6	7-	6+	7-	7-	7	7	7	7	1	2	7
09	7-	5	7-	7-	6+	7-	7	7	7	6	2	3	9
10	6-	4	7-	4o	7-	5-	6	6	6	6	3	(4)	22
11	6-	4	5+	6-	6o	6-	5	5	5	5	(4)	(4)	29
12	5o	5	5o	4-	6o	6-	4	5	5	5	(4)	(4)	24
13	5+	5	6-	5-	6-	6o	5	5	5	5	3	3	19
14	6-	5	6-	5+	6o	6+	5	5	6	6	3	2	14
15	6+	5	7-	7-	6o	6+	6	6	7	6	3	3	12
16	7-	5	6+	7-	7o	7o	6	6	7	6	3	2	11
17	6+	5	7-	6o	6o	6+	6	6	6	6	3	3	17
18	6-	6	6-	4+	6o	6+	6	4	5	5	(5)	(4)	29
19	6-	6	6+	4+	6-	6+	5	5	6	5	(4)	(4)	25
20	6o	6	6+	5+	6o	6o	5	5	6	6	(4)	3	17
21	6+	6	6o	6o	6o	7-	6	6	7	7	3	2	9
22	7-	6	7-	6+	6o	7o	6	7	7	7	1	1	3
23	7-	6	7-	6+	7-	7-	7	7	7	7	2	3	12
24	6o	7	6o	6+	6-	6-	6	5	6	6	(4)	(4)	26
25	6+	7	6o	6o	7-	6o	5	6	7	7	2	2	8
26	6+	7	6+	6-	6+	5+	6	7	7	7	2	2	6
27	6+	7	7-	6+	7-	6+	6	7	7	6	1	2	4
28	6+	7	7-	6+	6o	7-	6	6	6	6	3	3	17
29	6-	7	7-	4+	6-	6-	6	5	5	5	(4)	(4)	27
30	5+	6	5+	6-	5o	5+	5	5	5	5	(4)	3	27

RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

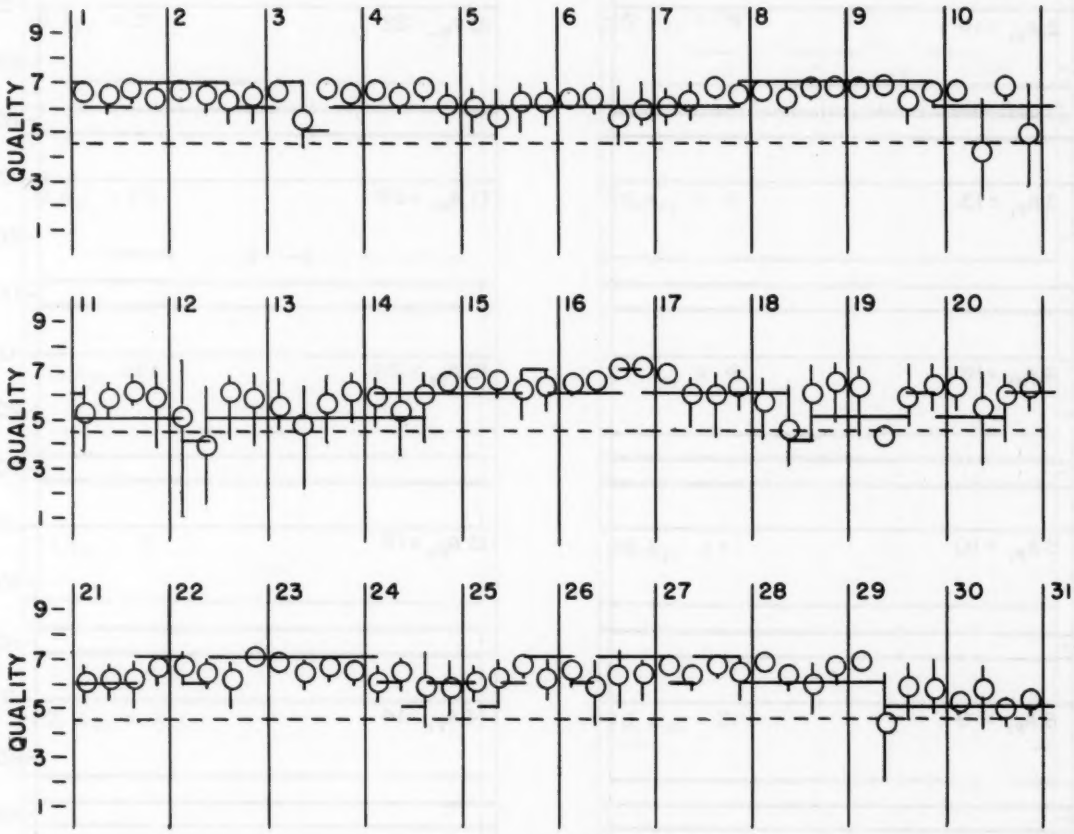
JUNE 1973

North Atlantic

– Short term forecast
o Quality figure

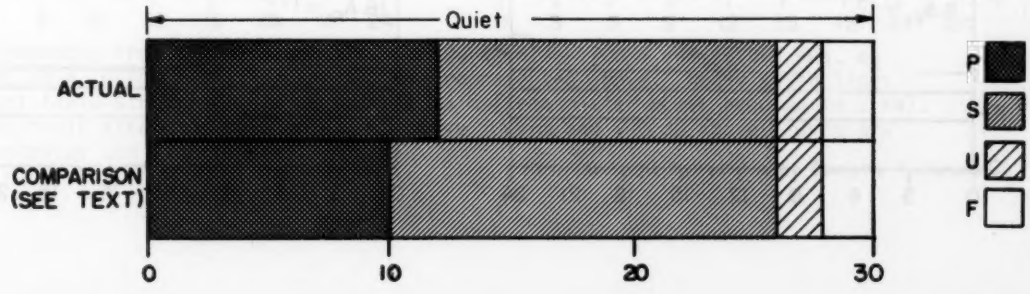
| range of reports

Day



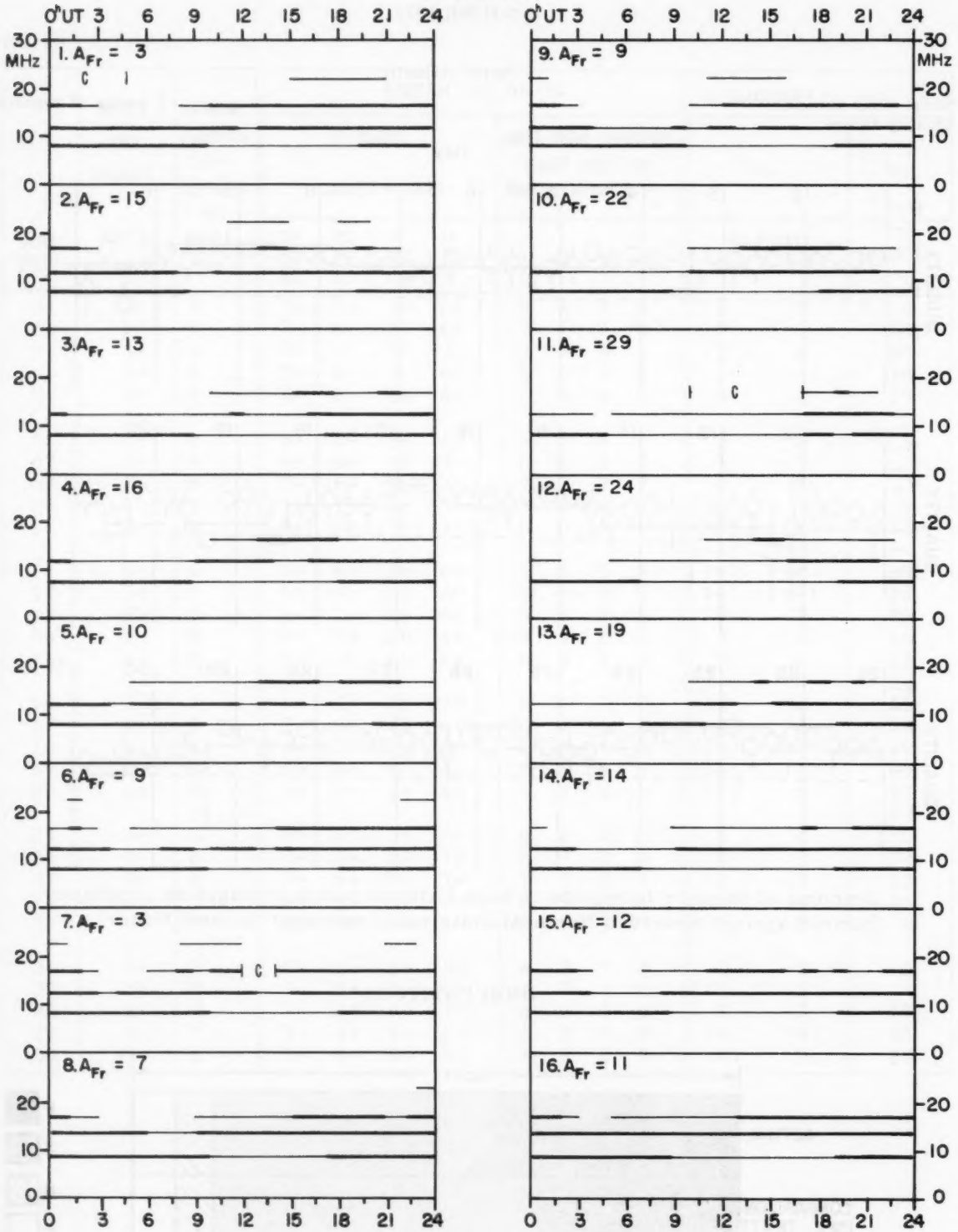
Outcome of advance forecasts of High Latitude radio propagation conditions (scored against observed North Atlantic radio propagation conditions)

HIGH LATITUDE



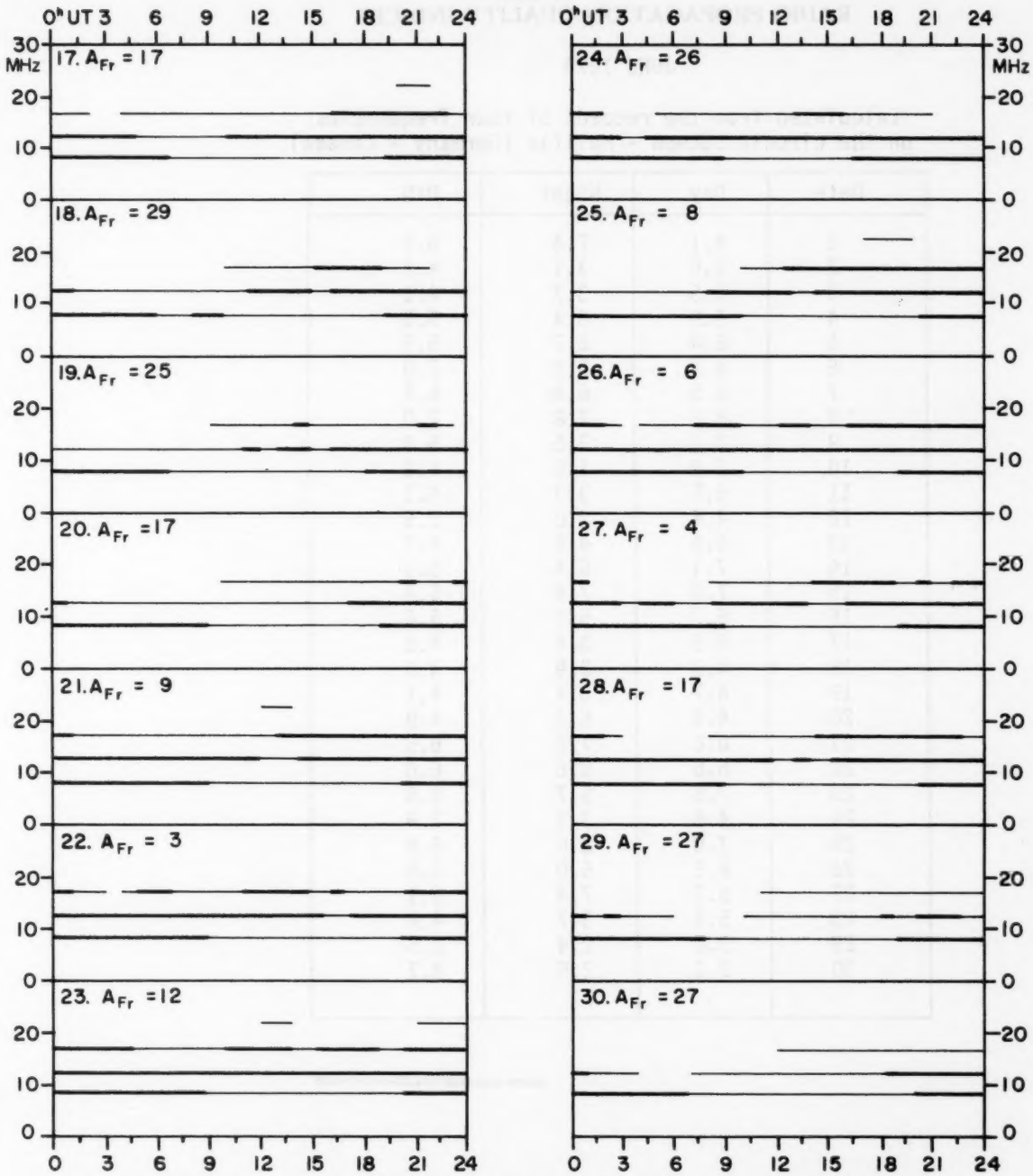
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JUNE 1973



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JUNE 1973



Field strengths from four frequencies, 8.542, 12.813, 17.084 and 22.378 MHz, as observed on a Lüchow - Halifax circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

JUNE 1973

Calculated from the records of four frequencies
on the circuit Lüchow - Halifax (Germany - Canada)

Date	Day	Night	D+N
1	8.1	7.4	6.9
2	5.5	3.1	4.2
3	5.5	3.7	4.1
4	5.9	6.4	5.5
5	6.4	6.7	5.5
6	8.2	8.2	7.0
7	8.5	6.8	6.7
8	8.5	7.8	7.0
9	7.6	3.5	5.3
10	3.9	1.9	4.3
11	5.5	3.3	4.1
12	4.4	2.0	2.5
13	5.8	4.4	4.7
14	7.1	6.4	6.1
15	7.0	7.4	6.4
16	6.3	5.3	5.4
17	5.8	3.4	4.5
18	4.3	2.9	3.6
19	4.7	3.7	4.1
20	4.9	6.3	4.9
21	6.6	7.8	6.5
22	6.6	8.6	6.8
23	7.5	6.7	6.5
24	4.6	3.1	3.9
25	7.0	8.0	6.8
26	6.5	6.0	5.8
27	6.2	7.4	6.1
28	5.4	3.7	4.4
29	3.0	2.4	2.5
30	3.2	2.9	2.7

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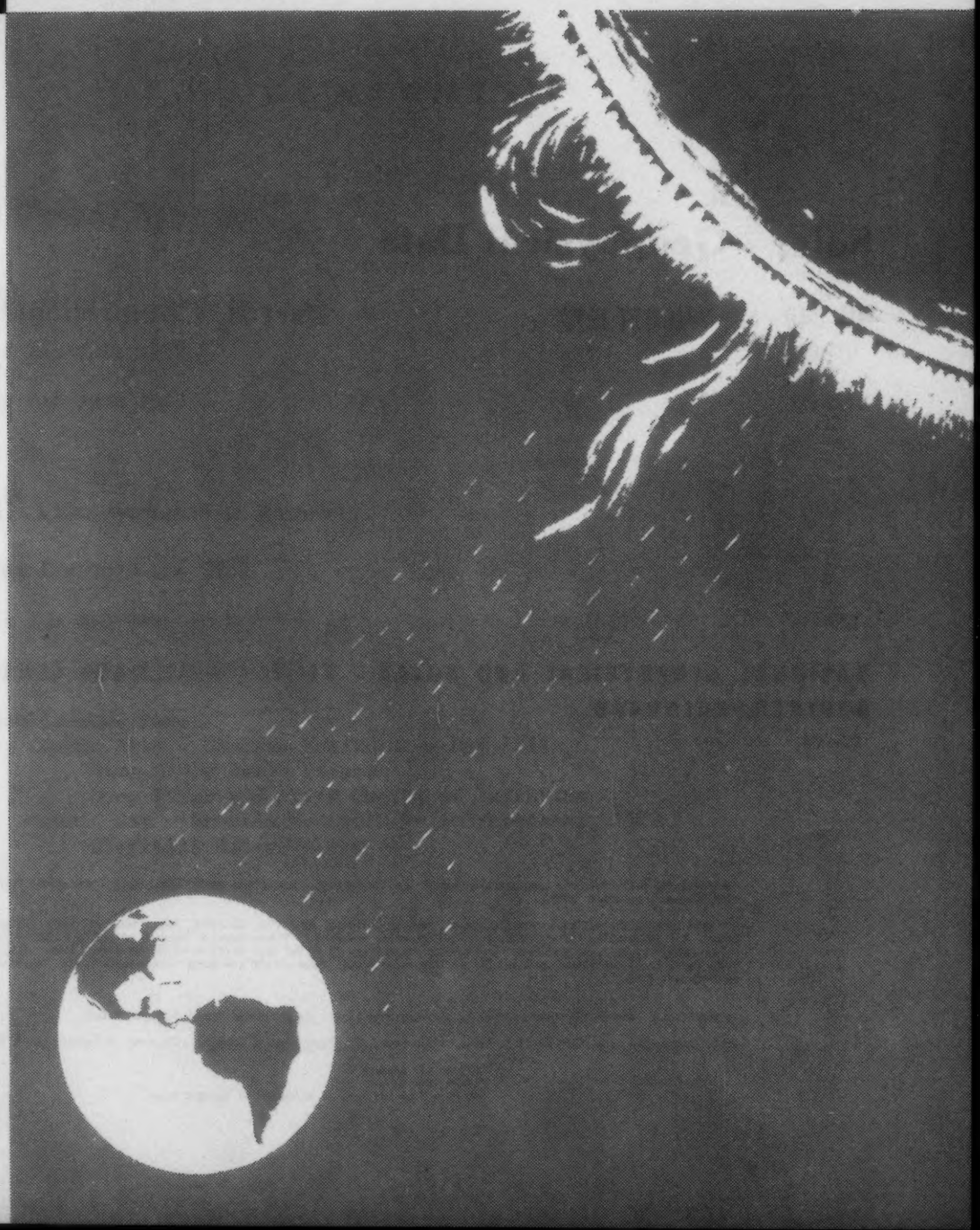
SOLAR-GEOPHYSICAL DATA
(comprehensive reports)

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Data Service



AUGUST 1973

NUMBER 348-PART II
DATA FOR
FEBRUARY 1973
JANUARY 1973
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Solar - Geophysical Data

NO. 348 AUGUST 1973

Part II (Comprehensive Reports)

DATA FOR
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299 Part I or 299 Part II to number of current issue.

SOLAR - GEOPHYSICAL DATA

No. 348

Issued in two parts

Hope I. Leighton, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

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For explanations of the data contained herein see "Descriptive Text" published as supplement to February 1973 "Solar-Geophysical Data" (Number 342).

SOLAR FLARES
Confirmed

FEBRUARY 1973

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IMPORTANCE	OBS. COND.	OBS. TYPE	MEASUREMENTS					REMARKS
	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY					TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hg	MAX. INT. %	
	01	0000	0052	NO FLARE PATROL															
	01	0055	0111	NO FLARE PATROL															
361 TEHR	01	0751	0757	0752	N07	E03	.231	12205	1.6	6	--N	3	C		.64				F 3
362 TEHR	01	0824	0901	0836	N04	W05	.194	12205	1.0	37	1B	2	C		2.09				S Z 3
363 TEHR	01	0847	0852	0848	N06	E02	.211	12205	1.5	5	--N	2	C		.36				F 4
365 HUAN	01	2028E	2034		S07	E75	.963	12212	7.5	6D	--F	1	C	2029					3
366 BOUL	01	2121	2123	2121	N13	W09	.358	12205	1.2	2	--F	2	V	2121		.25			2
	02	0053	0135	NO FLARE PATROL															
	02	0149	0211	NO FLARE PATROL															
	02	0508	0705	NO FLARE PATROL															
	02	0815	0828	NO FLARE PATROL															
	02	0932	1015	NO FLARE PATROL															
	02	1119	1125	NO FLARE PATROL															
367 RAMY	02	1137	1152	1140	N03	W68	.930	12210	28.4	15	--N	3	C		.26				DE 2
	02	1639	1644	NO FLARE PATROL															
GRP47368	02	1813	1837	1823	S02	E45	.708	12211	6.1	24	-N				.80				3 3 3 3
RAMY	02	1811	1845	1822	S01	E44	.697	12211	6.1	34	-N	3	C		.74				F
RAMY	02	1811	1845	1815	S01	E44	.697	12211	6.1	34	-N	3	C		.37				F
BOUL	02	1815	1831	1824	S02	E46	.720	12211	6.2	16	-N	2	V	1824	1.20	1.70			
PALE	02	1824E	1834	1824U	S02	E44	.695	12211	6.1	10D	-N	2	C		.45				F
RAMY	02	1830E	1845D	1832J	S01	E45	.709	12211	6.1	15D	-F	3	V		.28				DE
369 PALE	02	2323	2347	2331	N09	W23	.461	12205	1.2	24	--F	2	C		1.27				F 1
370 PALE	03	0001	0042	0004	N08	W23	.453	12205	1.3	41	--N	2	C		.55				F 2
371 PALE	03	0001	0042	0025	N08	W23	.453	12205	1.3	41	--N	2	C		.81				F 2
GRP47372	03	1746	1815	1753	S01	E31	.520	12211	6.1	29	--N				.56				3 3 2 3
RAMY	03	1745	1824	1754	S01	E32	.535	12211	6.1	39	-N	3	C		.56				DE
PALE	03	1747	1753D	1752	S01	E31	.520	12211	6.1	6D	-N	3	C		.55				F
BOUL	03	1747	1805	1754	S02	E29	.488	12211	5.9	18	-F	3	V	1754		1.00			
	03	2140	2148	NO FLARE PATROL															
374 TEHR	04	0610E	0625	0613U	S03	E23	.393	12211	6.0	15D	--N	3	V		.33				F 1
GRP47379	04	1252	1317	1301	S07	E34	.556	12212	7.1	25	--F				.61				3 3 3 6
CATA	04	1245E	1300D	1300	S07	E34	.556	12212	7.1	15D	-N	3		1300	.87	1.04		(166)	
RAMY	04	1258	1323	1305	S06	E34	.556	12212	7.1	25	-F	3	C		.46				DE
ATHN	04	1259E	1311	1259U	S07	E34	.556	12212	7.1	12D	-F	1	C		.50				DE
376 RAMY	04	1413	1424D		S06	E33	.542	12212	7.1	11D	--F	3	C						DE 3
	05	0450	0600	NO FLARE PATROL															
	05	2315	2322	NO FLARE PATROL															
	06	0213	0219	NO FLARE PATROL															
	06	0237	0256	NO FLARE PATROL															
GRP47378	06	1253	1313	1257	S08	E07	.124	12212	7.1	20	--N				.54				4 4 4 6
ATHN	06	1251E	1302	1252	S09	E05	.098	12212	6.9	11D	-N	1	V		.33				DE
RAMY	06	1252	1310	1254	S09	E08	.145	12212	7.1	18	-F	4	C		.37				DE
CAPS	06	1253	1314		S06	E07	.121	12212	7.1	21	-N	3	V	1255	.60	.60		(164)	
CATA	06	1255	1325	1300	S09	E08	.145	12212	7.1	30	-N	1		1300	.87	.88		(155)	
379 PALE	06	1835	1838D		S07	E04	.070	12212	7.1	3D	--F	1	C						3
380 HUAN	06	1856	1904		S13	E90	1.000	12224	13.5	8	--F	1	C	1902					D 3
	06	2229	2302	NO FLARE PATROL															

Note: Catania and Capri-S express Maximum Intensities in percent of the local undisturbed chromosphere instead of percent of the local continuum. Parentheses are used to indicate this difference.

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS					REMARKS
	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
	06	2306	2331	NO FLARE PATROL															
	07	0205	0211	NO FLARE PATROL															
	07	1551	1700	NO FLARE PATROL															
382 RAMY	07	1754	18020	1756	N10	E52	.812	12217	11.6	8D	--F	2	C		.21				DE 2
	07	1802	1807	NO FLARE PATROL															
	07	2005	2023	NO FLARE PATROL															
	07	2050	2057	NO FLARE PATROL															
	07	2105	2130	NO FLARE PATROL															
	07	2131	2150	NO FLARE PATROL															
383 PALE	07	2150E	2214	2155U	S08	W09	.158	12212	7.2	24D	--F	2	C		.36				F 1
384 PALE	08	0107	0120	0109	S08	W12	.208	12212	7.1	13	--F	2	C		.19				2
385 PALE	08	0332	0344	0334	S05	W19	.325	12212	6.7	12	--N	1	C		.27				F 2
	08	0433	0438	NO FLARE PATROL															
	08	0441	0454	NO FLARE PATROL															
386 RAMY	08	1417E	1442	1417U	N15	E26	.553	12223	10.5	25D	--F	2	C		.46				DE 3
387 PALE	10	0222	0234	0227	S07	W57	.835	12211	5.8	12	--F	3	C		.36				2
	10	0313	0329	NO FLARE PATROL															
390 ATHN	10	1345E	1402	1347	N08	E16	.368	12217	11.8	17D	--N	2	V		.33				DE 2
GRP47391	10	1401	1452	1408	S13	E45	.704	12224	14.0	51	--N				.59				3 3 3 3
RAMY	10	1401	14240	1408	S12	E44	.691	12224	13.9	23D	-N	3	C		.65				DE
ATHN	10	1405E	1428	1407	S15	E45	.706	12224	14.0	23D	-N	2	V		.50				DE
MCMA	10	1412E	1515		S12	E45	.703	12224	14.0	63D	-N		C	1412	.62	.90			EL
ATHN	10	1458E	1526	1458U	S15	E45	.706	12224	14.0	28D	-F	2	V		1.32				F
	11	0340	0346	NO FLARE PATROL															
393 TEHR	11	0433	0453	0435	S14	E74	.956	12227	16.7	20	-N	4	C		.83				DE 1
	11	1028	1050	NO FLARE PATROL															
	11	1055	1059	NO FLARE PATROL															
GRP47394	12	0933	1005	0940	N08	W10	.305	12217	11.6	32	--F				.55				2 2 2 4
ARCE	12	0930E	0955D		N07	W10	.291	12217	11.6	25D	-F		C	0940	.51	.50			
CATA	12	0935	1005	0940	N09	W09	.310	12217	11.7	30	-N	3		0940	.58	.60		(174)	
395 TEHR	12	1004	1014	1006	S10	E70	.935	12228	17.7	10	--F	3	C		.19				DE 3
396 MONT	12	1007	1012	1009	S09	W81	.985	12212	6.3	5	--F		C	1009	.10				3
GRP47397	12	1018	1032	1021	N12	W20	.458	12217	10.9	14	--N				.78				3 3 3 3
MONT	12	1016	1029	1020	N13	W20	.469	12217	10.9	13	-N		C	1020	.72				HE
TEHR	12	1017	1034	1022	N12	W21	.470	12217	10.9	17	-N	3	C		.45				F
CATA	12	1020	1020D	1020	N12	W20	.458	12217	10.9		-N	3		1020	1.16	1.28		(158)	
GRP47398	12	1208	1306	1224	S11	E18	.314	12224	13.9	58	1N				2.96				6 5 5 6
MONT	12	1204	1230D	1224	S11	E18	.314	12224	13.9	26D	1B		C	1224	4.54				
TEHR	12	1205	1303	1222	S11	E18	.314	12224	13.9	58	-N	3	C		1.45				U
ARCE	12	1210E	1310		S12	E18	.318	12224	13.9	60D	1N		C	1217	3.31	3.70			K
CATA	12	1210	1305D	1235	S12	E18	.318	12224	13.9	55D	1B	3		1235	2.60	2.76		(204)	U
ATHN	12	1211E	1239D	1216	S12	E18	.318	12224	13.9	28D	-N	2	V		1.49				U F
CAPS	12	1225	1305		S07	E18	.307	12224	13.9	40	1N	1	S	1226	4.00	4.20		(182)	BU
GRP47399	12	1521	1531	1522	S16	E54	.805	12227	16.7	10	-N				.61				2 2 2 3
MCMA	12	1519E	1533D	1522	S17	E53	.796	12227	16.6	14D	-N		C	1522	.52	.90			E
CAPS	12	1522	1529		S15	E55	.814	12227	16.8	7	-N	2	V	1525	.70	1.20		(189)	C
400 HUAN	12	1814	1816D		S07	E74	.958	12228	18.3	2D	--F	1	P	1815					2
401 PALE	12	2040E	2048D	2040U	N05	W16	.339	12217	11.7	8D	--N	3	C		.72				F 1

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OBSERVATORY	OBSERVED UT				LOCATION						DURATION	IMPORTANCE	OBS.		MEASUREMENTS					REMARKS
	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY		MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
	12	2059	2125	NO FLARE PATROL																
	12	2140	2218	NO FLARE PATROL																
	12	2221	2247	NO FLARE PATROL																
	12	2400	0012	NO FLARE PATROL																
	13	0029	0037	NO FLARE PATROL																
	13	0040	0048	NO FLARE PATROL																
	13	0051	0109	NO FLARE PATROL																
402 MANI	13	0109E	0118	0109	S16	E55	.815	12227	17.2		9D	--F	1		0109	.52	.86			2
	13	0157	0205	NO FLARE PATROL																
GRP47403	13	0829	0921	0835	N07	W21	.423	12217	11.8		52	-N				1.08				3 2 2 3
TEHR	13	0829	0912	0834	N06	W20	.402	12217	11.9		43	-N	4	C		1.00				F
CATA	13	0830E	0930	0835	N08	W22	.445	12217	11.7		60D	-N	1		0835	1.16	1.28		(200)	
MEUD	13	0946E	0915		N07	W22	.437	12217	11.7		29D	-F		C	0856	.72	.88			E
GRP47404	13	1353	1415	1410	S10	E63	.886	12228	18.3		22	-N				.75				3 3 3 3
HUAN	13	1353	1407D		S11	E63	.885	12228	18.3		14D	-F	1	C	1407	.46	.85			
MEUD	13	1407E	1410D		S09	E63	.886	12228	18.3		3D	-N		C	1409	.62	1.20			E
CATA	13	1410E	1415D	1410	S10	E63	.886	12228	18.3		5D	1N	3		1410	1.16	2.52		(191)	
	13	1529	1555	NO FLARE PATROL																
GRP47405	13	1720	1740	1723	N04	W31	.541	12217	11.4		20	--F				.77				3 2 1 3
MCMA	13	1719	1747	1722	N04	W30	.527	12217	11.5		28	-N		C	1722	.77	.90			EH
HUAN	13	1720	1733	1724	N04	W31	.541	12217	11.4		13	-F	1	C	1724					E
RAMY	13	1744E	1756D	1744U	N05	W28	.585	12217	11.6		12D	-F	2	C		1.44				OE
	13	1950	2102	NO FLARE PATROL																
	13	2115	2311	NO FLARE PATROL																
	13	2316	2323	NO FLARE PATROL																
406 MANI	14	0003E	0009	0003	S14	E35	.575	12227	16.6		6D	--N	1		0003	.31	.38			2
GRP47407	14	0003E	0010	0004	N05	W31	.546	12217	11.7		7	--N				.52				2 2 2 2
PALE	14	0003E	0010D	0004	N06	W30	.538	12217	11.8		7D	-N	2	V		.62				F
MANI	14	0003E	0010D	0003	N04	W32	.555	12217	11.6		7D	-N	1		0003	.41	.50			
408 MITK	14	0210	0225	0213	S18	E37	.612	12227	16.9		15	--N		C	0213	.52	.70			D 2
	14	0547	0605	NO FLARE PATROL																
409 TEHR	14	1026	1036	1029	N03	W35	.592	12217	11.8		10	--N	4	C		.09				DE 1
410 TEHR	14	1239	1250	1240	N06	W38	.643	12217	11.7		11	--F	3	C		.55				F 3
GRP47411	14	1248	1259	1252	N14	W57	.868	12223	10.3		11	-N				.73				3 3 3 3
HUAN	14	1246	1258	1251	N15	W60	.894	12223	10.0		12	-N	1	C	1251	.41	.84			
TEHR	14	1249	1258	1251	N14	W54	.843	12223	10.5		9	-B	3	C		.64				F
RAMY	14	1250E	1302	1253U	N14	W58	.876	12223	10.2		12D	-N	3	C		1.13				DE
412 HUAN	14	1337	1347	1340	N15	W58	.879	12223	10.2		10	--F	1	C	1340	.31	.63			2
	14	1846	1905	NO FLARE PATROL																
417 RAMY	14	1905E	1905D	1905U	N13	W61	.897	12223	10.2			-N	2	C		.98				DE 1
	14	1910	2137	NO FLARE PATROL																
	14	2143	2358	NO FLARE PATROL																
419 BOUL	14	2309	2318	2312	N16	W65	.929	12223	10.1		9	--F	2	V	2312					1
420 PALE	15	0057	0123	0059	N15	W60	.894	12223	10.5		26	-N	2	V		.57				1
GRP47421	15	0142	0203	0143	N16	W62	.910	12223	10.4		21	-N				.71				3 3 3 3
PALE	15	0142	0154	0143	N15	W61	.901	12223	10.5		12	-N	3	V		.67				
MANI	15	0143E	0155D	0143	N15	W61	.901	12223	10.5		12D	-N	1		0143	.83	1.66			
MITK	15	0145E	0220D		N17	W64	.924	12223	10.3		35D	-N		C	0145	.62				D

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS					REMARKS
	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
422 MITK	15	0334	0351D	0337	N16	W65	.929	12223	10.3	17D	--F		C	0337	.52				D 2
	15	0428	0442	NO FLARE PATROL															
423 MITK	15	0448	0505	0449	N17	W64	.924	12223	10.4	17	--F		C	0449	.52				OH 1
GRP47426	15	0826	0929	0903	S15	W23	.407	12224	13.6	63	-N				.85				4 3 2 6
ISTA	15	0826	0920		S19	W29	.511	12224	13.2	54	-F								G
ARCE	15	0840E	0925D		S13	W20	.352	12224	13.9	45D	-N		C	0850	.77	.80			
MANI	15	0901E	0920D	0901	S13	W20	.352	12224	13.9	19D	-N	1		0901	.93	.99			
CATA	15	0905E	0950	0905	S13	W20	.352	12224	13.9	45D	1N	3		0905	2.90	3.11		(186)	
GRP47427	15	0910	0918	0912	N16	W66	.935	12223	10.4	8	-N				.61				3 3 2 6
ISTA	15	0909	0915		N16	W64	.923	12223	10.6	6	-N								D
MANI	15	0910	0919	0913	N16	W68	.946	12223	10.3	9	-N	1		0913	.93	1.99			
CATA	15	0910	0920	0910	N16	W65	.929	12223	10.5	10	-N	3		0910	.29	.75		(186)	
GRP47430	15	1806	1837	1813	S09	E33	.541	12228	18.2	31	--F				.54				2 2 2 3
RAMY	15	1806	1836	1811	S09	E34	.555	12228	18.3	30	-F	3	C		.37				DE
PALE	15	1808E	1824	1812	S08	E32	.526	12228	18.2	16D	-N	3	C		.55				F
RAMY	15	1812E	1835D	1814	S10	E34	.556	12228	18.3	23D	-F	3	V		.52				DE
PALE	15	1828	1837	1830	S08	E32	.526	12228	18.2	9	-N	3	C		.55				F
431 BOUL	15	1830	1855	1836	S15	W22	.392	12224	14.1	25	--F	3	V	1836		.38			2
435 BOUL	15	2222	2235	2225	N17	W82	.995	12223	9.8	13	-N	3	V	2230	.50	1.75			1
436 BOUL	15	2314	2324	2316	N17	W82	.995	12223	9.8	10	--F	2	V	2318	.40	1.40			2
	15	2326	2334	NO FLARE PATROL															
437 MANI	15	2337E	2348	2337	N11	W78	.984	12223	10.1	11D	--F	2		2337	.52	1.28			1
GRP47438	15	2337	2355	2343	S10	E31	.512	12228	18.3	18	--F				.62				2 2 1 2
MANI	15	2337E	2355D	2343	S10	E30	.498	12228	18.2	18D	-N	2		2343	.62	.71			
PALE	15	2337	2355D		S09	E31	.512	12228	18.3	18D	-F	3	V						F
	15	2355	0040	NO FLARE PATROL															
	16	0120	0125	NO FLARE PATROL															
	16	0155	0203	NO FLARE PATROL															
439 MITK	16	0208	0221	0211	S08	E36	.584	12228	18.8	13	--F		C	0211	.83	1.00			E 1
	16	0314	0319	NO FLARE PATROL															
441 ATHN	15	0653E	0720	0653J	N18	W84	.998	12223	10.0	27D	--F	2	C						DE 3
GRP47444	16	1111	1143	1117	S09	E24	.405	12228	18.3	32	--F				1.25				4 4 3 6
ATHN	16	1105	1146	1118	S09	E23	.389	12228	18.2	41	-F	3	C		1.49				F
TEHR	16	1110E	1139	1112	S10	E26	.467	12228	18.6	29D	-F	3	V		.83				F
CATA	15	1115	1135D	1120	S09	E24	.405	12228	18.3	20D	-N	3		1120	1.44	1.58		(178)	
ISTA	15	1115	1240		S09	E22	.373	12228	18.1	85	-N								
445 ATHN	16	1146	1202	1151	N16	W85	.999	12223	10.1	16	--F	3	C						DE 5
GRP47446	16	1209	1247	1214	S09	E25	.420	12228	18.4	38	1N				2.78				3 3 3 5
TEHR	16	1209	1233	1213	S10	E27	.452	12228	18.5	24	-N	3	V		.83				F
ATHN	16	1212E	1243	1215	S08	E23	.388	12228	18.2	31D	-N	3	V		1.32				F
WEND	16	1216E	1306		S08	E24	.404	12228	18.3	50D	2F		V		6.19				
	16	2325	2354	NO FLARE PATROL															
	17	0342	0048	NO FLARE PATROL															
	17	0145	0157	NO FLARE PATROL															
	17	0248	0405	NO FLARE PATROL															
	17	0636	0641	NO FLARE PATROL															
448 TEHR	17	0842	0856	0844	S16	E10	.231	12228	18.1	14	--N	3	C		.36				DE 2
449 TEHR	17	1109	1143	1118	S10	E28	.467	12233	19.6	34	--F	2	C		.91				F 3
GRP47450	17	1203	1258	1208	S15	W44	.693	12224	14.2	47	--F				.31				2 1 1 4
RAMY	17	1203	1258	1208U	S15	W44	.693	12224	14.2	47	-F	3	C		.31				DE
CATA	17	1210	1255D	1225	S13	W44	.691	12224	14.2	45D	-F	1		1225	.87	1.21		(145)	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS					REMARKS
					APPROX.		CENTRAL	MCMATH PLAGE	CMP										
	DATE FEB	START	END	MAX. PHASE	LAT.	MER. DIST.	DISTANCE	REGION	DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH HG	MAX. INT. %	
GRP47451	17	1305	1336	1308	S17	W47	.731	12224	14.0	31	--F				1.21				2 1 1 4
RAMY	17	1305	1336	1308	S17	W47	.731	12224	14.0	31	-F	3	C		1.21				F
HUAN	17	1303	1332		S16	W48	.741	12224	13.9	24	-F	1	C	1321	.46	.70			E
GRP47452	17	2209	2218	2214	S18	W15	.315	12227	16.8	9	-F				1.02				2 2 1 2
RAMY	17	2209	2215D	2214	S18	W15	.315	12227	16.8	6D	-N	1	C		1.02				F
PALE	17	2216E	2218D		S17	W14	.292	12227	16.9	2D	-F	2	V						F
453 MANI	17	2246E	2257	2248	S10	E05	.102	12228	18.3	11D	--F	1		2248	.52	.52			2
454 PALE	18	0037E	0041D	0037U	S11	E04	.099	12228	18.3	4D	--F	2	C		.55				F 1
	18	0041	0104	NO FLARE PATROL															
455 KODA	18	0216E	0228	0217	S17	W17	.332	12227	16.8	12D	--N		C	0221	1.69	1.70	1.56		D 3
456 ATHN	18	0754	0813	0758	S09	W02	.050	12228	18.2	19	--F	2	C		.50				DE 3
457 ATHN	18	0814E	0830	0816	N06	W90	1.000	12217	11.6	16D	--F	3	V						DE 2
GRP47460	18	2105	2257	2132	S09	W06	.110	12228	18.4	112	1B				2.04				2 2 2 2
BOUL	18	2105E	2315D	2127U	S07	W05	.087	12228	18.5	130D	1B	2	V	2130	2.00	2.00			
PALE	18	2112E	2238	2136	S10	W07	.132	12228	18.4	86D	1N	2	C		2.07				DE S
461 PALE	19	0347	0408	0357	S13	W47	.727	12227	15.6	21	--N	2	C		.63				F 2
	19	0428	0451	NO FLARE PATROL															
	19	0505	0512	NO FLARE PATROL															
	19	0520	0539	NO FLARE PATROL															
	19	0547	0609	NO FLARE PATROL															
GRP47462	19	0609	0739	0625	S08	W13	.224	12228	18.3	90	1B				2.15				2 1 1 2
ATHN	19	0609E	0739	0625U	S08	W13	.224	12228	18.3	90D	1B	2	V		2.15				U F
KODA	19	0707	0725		S08	W14	.241	12228	18.2	18	1B		P	0709	2.66	2.70			E
GRP47463	20	0349	0415	0355	S14	W47	.727	12227	16.6	26	-N				.91				2 1 1 3
TEHR	20	0349	0415	0355	S14	W47	.727	12227	16.6	26	-N	3	C		.91				F
MANI	20	0406E	0442	0407	S13	W48	.738	12227	16.6	36D	-N	2		0407	.62	.92			
GRP47464	20	0615	0639	0619	S10	W28	.467	12228	18.2	24	--F				.53				2 2 2 3
ATHN	20	0615	0634	0619	S12	W29	.485	12228	18.1	19	-N	3	V		.50				DE
TEHR	20	0615	0644	0619	S07	W27	.451	12228	18.2	29	-F	3	C		.55				F
467 RAMY	20	1247	1300		N08	W75	.971	12239	14.9	13	--F	2	C						DE 2
468 HUAN	20	1316	1322		S09	W78	.975	12224	14.7	6	--F	1	C	1319					3
GRP47469	20	1301	1912	1903	S18	W59	.852	12227	16.4	11	--F				.37				2 2 1 2
RAMY	20	1301	1912	1903	S18	W58	.843	12227	16.4	11	-F	2	C		.37				DE
PALE	20	1906E	1912D		S17	W59	.851	12227	16.4	6D	-F	2	V						U
	20	2205	2257	NO FLARE PATROL															
	20	2305	2310	NO FLARE PATROL															
	20	2319	2344	NO FLARE PATROL															
	21	0215	0232	NO FLARE PATROL															
	21	0246	0252	NO FLARE PATROL															
	21	0310	0330	NO FLARE PATROL															
	21	0342	0355	NO FLARE PATROL															
	21	0408	0523	NO FLARE PATROL															
	21	0536	0550	NO FLARE PATROL															
470 MANI	21	0614E	0635	0626	S13	W61	.868	12227	16.7	21D	-N	2		0626	.52	.96			1
	21	0648	0701	NO FLARE PATROL															
	21	0703	0749	NO FLARE PATROL															
	21	1305	1310	NO FLARE PATROL															

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	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hg	MAX. INT. %	
	21	1552	1621	NO FLARE PATROL															
	21	2039	2111	NO FLARE PATROL															
471 PALE	21	2232E	2234D	2234U	N18	E14	.479	12236	23.0	2D	--N	2	V		.52				F 2
472 PALE	22	0134E	0138	0135	S16	W72	.944	12227	16.7	4D	--N	2	V		.31				2
473 ATHN	22	0802E	0803D	0802U	N09	E90	1.000	12246	1.1	1D	-B	2	C						DE 3
	22	1235	1405	NO FLARE PATROL															
474 CATA	22	1500E	1510D	1505	S11	W58	.842	12228	18.3	10D	2F	1		1505	3.19	5.95		(138)	3
	22	1520	1618	NO FLARE PATROL															
475 MANI	22	2350E	0018	2352	N08	E90	1.000	12246	1.7	28D	1B	2		2352					1
GRP47476	23	0223	0240	0228	N08	E88	1.000	12246	1.7	17	-N				.66				3 3 3 3
MITK	23	0221E	0246	0230	N09	E90	1.000	12246	1.8	25D	1N		C	0230	.52				DH
PALE	23	0223	0234	0226	N08	E85	.998	12246	1.5	11	-N	1	V		.62				
MANI	23	0225	0239	0229	N08	E88	1.000	12246	1.7	14	-N	2		0229	.83	2.55			
GRP47477	23	0252	0306	0258	N09	E89	1.000	12246	1.8	14	-B				.68				2 2 2 2
MITK	23	0250	0306	0258	N09	E90	1.000	12246	1.9	16	1B		C	0258	.52				DH
MANI	23	0254	0306	0257	N08	E88	1.000	12246	1.7	12	-N	2		0257	.83	2.55			
GRP47478	23	0423	0437	0426	N08	E88	1.000	12246	1.8	14	-B				.34				2 2 2 3
MANI	23	0423	0441	0426	N07	E88	1.000	12246	1.8	18	-N	2		0426	.41	1.28			
TEHR	23	0426E	0432	0426U	N08	E87	.999	12246	1.7	6D	-B	2	C		.27				F
479 MANI	23	0623	0642	0624	N07	E88	1.000	12246	1.9	19	-N	2		0624	.31	.96			1
GRP47481	23	0725	0743	0728	N08	E88	1.000	12246	1.9	18	--F				.39				2 2 2 3
MANI	23	0725	0743	0728	N08	E88	1.000	12246	1.9	18	-N	2		0728	.41	1.28			
TEHR	23	0725E	0734D	0727	N08	E87	.999	12246	1.8	9D	-F	2	C		.36				F
482 MANI	23	0755	0801	0756	N07	E87	.999	12246	1.9	6	--N	2		0756	.31	.93			3
	23	1008	1020	NO FLARE PATROL															
	23	1023	1029	NO FLARE PATROL															
	23	1031	1038	NO FLARE PATROL															
	23	1100	1105	NO FLARE PATROL															
	23	1140	1200	NO FLARE PATROL															
GRP47483	23	1328	1345	1334	S16	W45	.706	12233	20.2	17	--F				.51				2 2 2 2
ARCE	23	1325E	1350D		S17	W45	.707	12233	20.2	25D	-N		C	1325	.61	.80			H
MEUD	23	1331	1340	1334	S15	W45	.704	12233	20.2	9	-F		C	1334	.41	.60			E
	23	1400	1456	NO FLARE PATROL															
	23	1626	1657	NO FLARE PATROL															
484 BOUL	23	2223	2241	2226	S08	W63	.886	12247	19.2	18	--F	1	V						1
GRP47485	23	2308	2318	2309	N07	E79	.985	12246	1.9	10	--N				.31				2 2 1 2
MANI	23	2306E	2315	2306	N08	E76	.975	12246	1.7	9D	-N	1		2306	.31	.73			
BOUL	23	2309	2320	2311	N06	E81	.990	12246	2.0	11	-N	1	V						
486 MITK	23	2329E	0016D	2347	S11	W64	.893	12247	19.2	47D	-B		C	2347	.52	1.10			D 2
487 MANI	24	0040	0110	0049	S10	W62	.877	12247	19.4	30	--F	2		0049	.41	.76			2
GRP47488	24	0210	0240	0219	S10	W63	.885	12247	19.4	30	--F				.41				2 1 1 4
MANI	24	0210	0240	0219	S10	W63	.885	12247	19.4	30	-F	2		0219	.41	.78			
KODA	24	0237E	0332D	0316	S10	W64	.893	12247	19.3	55D	1B		P	0253	3.67	3.70	1.72		OK
	24	0417	0421	NO FLARE PATROL															
	24	0424	0433	NO FLARE PATROL															
	24	0446	0456	NO FLARE PATROL															
	24	0517	0525	NO FLARE PATROL															

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	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
GRP47489	24	0551	0607	0555	N07	E70	.947	12246	1.5	16	--F				.35				2 2 2 2
MANI	24	0551	0603D	0554	N07	E70	.947	12246	1.5	12D	-F	2		0554	.41	.88			
TEHR	24	0551	0607	0555	N07	E69	.941	12246	1.4	16	-F	3	C		.28				F
490 ATHN	24	0729E	0736	0729U	N08	E68	.936	12246	1.4	7D	--N	2	C		.33				DE 3
GRP47491	24	0835	0859	0839	S10	W69	.928	12247	19.2	24	--N				.31				2 2 2 3
CATA	24	0835	09000	0840	S09	W68	.922	12247	19.3	25D	-N	1		0840	.29			(166)	
ATHN	24	0838E	0857	0838U	S10	W69	.928	12247	19.2	19D	-N	2	C		.33				DE
492 ATHN	24	0938	0947	0940	N05	E64	.906	12246	1.2	9	-N	2	C		.66				DE 2
493 ATHN	24	0952E	10100	0953	S11	W70	.934	12247	19.2	18D	--F	3	V		.33				DE 1
	24	1010	1015	NO FLARE PATROL															
	24	1025	1035	NO FLARE PATROL															
	24	1045	1115	NO FLARE PATROL															
494 RAMY	24	1126E	1140	1128	N04	E62	.890	12246	1.1	14D	--N	2	C		.28				DE 2
495 RAMY	24	1236	1249	1239	N04	E62	.890	12246	1.2	13	--N	4	C		.28				DE 3
497 HUAN	24	1318E	1321		N07	E66	.923	12246	1.5	3D	--F	1	C	1319	.26				CD 3
498 HUAN	24	1326	1330	1327	N07	E67	.929	12246	1.6	4	--F	1	C	1327	.31				2
499 RAMY	24	1602	1610	1605	N04	E60	.874	12246	1.2	8	--F	3	C		.28				DE 2
GRP47500	24	2040	2050	2048	N09	E62	.898	12246	1.5	10	-N				.70				2 2 2 4
RAMY	24	2036E	20500	2036U	N08	E64	.911	12246	1.7	14D	-F	3	V		.21				DE
RAMY	24	2045	2102D	2048	N10	E61	.892	12246	1.4	17D	-N	3	V		.77				DE
HUAN	24	2049E	2049D		N08	E62	.896	12246	1.5		-N	1	P	2049	.62	1.37			E
501 MANI	24	2325E	2345	2327	N08	E63	.903	12246	1.7	20D	-N	1		2327	.52	1.02			2
503 MITK	25	0315	0320	0317	N08	E59	.872	12246	1.6	4	-N		C	0317	.52	1.10			D 2
504 RAMY	25	1425	14350	1427	S14	E16	.295	12242	26.8	10D	--F	3	C		.19				DE 3
GRP47505	25	1645	1704	1647	N04	E46	.734	12246	1.1	19	--N				.46				3 3 3 3
BOUL	25	1544	1713	1646	N04	E47	.746	12246	1.2	29	-N	3	V	1650	.60	.85			
RAMY	25	1645	1701	1647	N05	E46	.737	12246	1.1	16	-N	3	C		.46				DE
HUAN	25	1645	1658	1647	N03	E45	.720	12246	1.1	12	-F	1	C	1647	.31	.44			D
506 RAMY	25	2104	2114	2106	N07	E47	.754	12246	1.4	10	--N	3	C		.46				DE 3
GRP47507	25	2204	2215	2210	N03	E50	.776	12246	1.7	11	--N				.26				3 3 3 3
BOUL	25	2157	2215	2209	N03	E51	.787	12246	1.7	18	-N	3	V	2210	.30	.50			
PALE	25	2208	2215	2210	N02	E50	.774	12246	1.7	7	-N	2	C		.27				
RAMY	25	2208	2216	2210	N03	E49	.765	12246	1.6	8	-F	2	V		.21				DE
GRP47509	26	0818	0827	0820	N05	E40	.666	12246	1.3	9	--F				.57				4 4 4 5
TEHR	26	0817	0831	0818	N05	E44	.714	12246	1.6	14	-F	4	C		.36				F
MANI	26	0818	0822	0820	N05	E44	.714	12246	1.6	4	-N	2		0820	.52	.76			
ARCE	26	0820E	08300		N05	E34	.588	12246	28.9	10D	-F		C	0820	.58	.70			
ATHN	26	0821E	08240	0821U	N06	E37	.632	12246	1.1	3D	-N	2	V		.83				DE
GRP47510	26	0948	0959	0950	N03	E38	.633	12246	1.3	11	--N				.61				3 3 3 5
MONT	26	0946	0952	0947	N05	E37	.628	12246	1.2	6	-N		C	0947	.41				E
CATA	26	0950	10050	0950	S03	E35	.575	12246	1.0	15D	-B	1		0950	1.16	1.43		(263)	
ARCE	26	0951E	10000		N06	E43	.706	12246	1.6	9D	-F		C	0955	.26	.40			
511 MCMA	26	1527	1535	1528	N04	E41	.674	12246	1.7	8	--F		C	1528	.26	.40			D 3
GRP47512	26	2010	2031	2016	N04	E33	.570	12246	1.3	21	--F				.40				3 3 2 3
MCMA	26	2010	20140		N04	E38	.637	12246	1.7	4D	-F		C	2014	.25	.40			E
PALE	26	2010	2026	2015	N04	E30	.529	12246	1.1	16	-N	3	C		.55				F
BOUL	26	2016E	20350	2016	N03	E31	.538	12246	1.2	19D	-F	2	V			1.60			
	26	2217	2240	NO FLARE PATROL															
	26	2309	2325	NO FLARE PATROL															
	27	0044	0134	NO FLARE PATROL															
513 MANI	27	0208E	0227	0208	N07	E32	.573	12246	1.5	19D	--N	1		0208	.83	1.00			1

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	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
GRP47514	27	1043	1123	1054	N03	E20	.381	12246	1.0	34	-N				2.11				2 2 2 4
TEHR	27	1049	1122	1052	N03	E21	.396	12246	1.0	33	-N	3	C		1.64				F
MONT	27	1049	1124	1055	N02	E19	.360	12246	28.9	35	1N		C	1055	2.58				
515 TEHR	27	1142	1158	1145	N05	W29	.521	12249	25.3	16	--F	4	C		.64				F 3
GRP47516	27	1341	1422	1356	N08	E27	.514	12246	1.6	41	-N				1.07				4 3 3 5
TEHR	27	1340	1417	1354	N07	E25	.480	12246	1.4	37	-N	3	C		1.19				F
MCMA	27	1340	1435	1358	N08	E25	.488	12246	1.4	55	-N		C	1358	1.03	1.10			EKL
CAPS	27	1342	1415	1356	N08	E31	.566	12246	1.9	33	-B	2	V	1357	1.00	1.20		(250)	
HUAN	27	1406E	14290		N05	E27	.494	12246	1.6	23D	-N	1	P	1409	.46	.54			E
GRP47517	27	1853	1910	1857	N03	E16	.325	12246	1.0	17	--F				.29				3 3 3 3
MCMA	27	1852	1921	1856	N03	E15	.311	12246	28.9	29	-N		C	1856	.31	.30			EK
MCMA	27	1852	1921	1907	N03	E15	.311	12246	28.9	29	-N		C						
PALE	27	1853	1908	1859	N03	E17	.339	12246	1.1	15	-F	3	C		.27				F H
BOUL	27	1855	1900	1857	N03	E16	.325	12246	1.0	5	-F	2	V	1858	.30	.30			
	27	2336	0049	NO FLARE PATROL															
518 MANI	28	0208E	0211	0208	N03	E13	.284	12246	1.1	3D	--N	2		0208	.62	.65			2
GRP47519	28	0403	0428	0411	N08	E09	.303	12246	28.8	25	-N				1.15				3 3 3 3
MANI	28	0357	0432	0412	N09	E10	.326	12246	28.9	35	-B	2		0412	1.65	1.74			
TEHR	28	0405	0431	0409	N07	E08	.280	12246	28.8	26	-N	2	C		.63				F
MITK	28	0406	0422	0412	N09	E10	.326	12246	28.9	16	-N		C	0412	1.13	1.20			DL
TEHR	28	0407	0431	0410	N07	E08	.280	12246	28.8	24	-N	4	V		.66				F
4 STATIONS REPORTING GROUP 47520. 3 STATIONS OBSERVING AND NOT REPORTING.																			
GRP47520	28	0814	0843	0820	N09	E07	.303	12246	28.9	29	--F				.64				3 3 3 7
MONT	28	0811	0853	0824	N09	E08	.310	12246	28.9	42	-N		C	0824	.41				
MANI	28	0813	08190	0815	N10	E06	.312	12246	28.8	6D	-F	1		0815	.31	.32			
TEHR	28	0818	0832	0822	N07	E08	.280	12246	28.9	14	-F	2	C		1.19				DE
520 CATA	28	0820	0920	0825	S09	E07	.125	12246	28.9	60	*-N	1		0825	.87	.90		(151)	6
520 MONT	28	0856	0920	0911	N09	E08	.310	12246	1.0	24	*-N		C	0911	.41				5
GRP47521	28	1102	1125	1111	N07	E14	.341	12246	1.5	23	--F				.51				5 4 4 7
TEHR	28	1100	1127	1105	N07	E13	.329	12246	1.4	27	-F	2	C		.64				DE
MEUD	28	1101	1122	1108	N07	E14	.341	12246	1.5	21	-F		C	1108	.41	.40			E
CAPS	28	1106	1121		N05	E15	.331	12246	1.6	15	-N	2	S	1115	.60	.60		(182)	
RAMY	28	1116E	1128	1119U	N07	E13	.329	12246	1.4	12D	-F	2	C		.37				DE
ATHN	28	1128E	1132	1128U	N06	E12	.306	12246	1.4	4D	-N	2	C		.50				DE
GRP47523	28	1311	1332	1317	N06	E13	.317	12246	1.5	21	-N				1.13				4 3 3 8
CAPS	28	1310	1319		N05	E15	.331	12246	1.7	9	-N	2	V	1318	.80	.80			
MCMA	28	1310E	1345	1316	N07	E11	.308	12246	1.4	35D	-N		C	1316	1.34	1.40			F
MEUD	28	1312	1332	1315	N06	E13	.317	12246	1.5	20	-F		C	1315	1.24	1.30			E
CATA	28	1315E	13550	1320	S06	E12	.208	12246	1.5	40D	-N	1		1320	1.73	1.81		(186)	
GRP47526	28	1543	1622	1602	N08	E02	.264	12246	28.8	39	--N				.31				3 2 2 6
RAMY	28	1537	1618	1541	N07	E01	.246	12246	28.7	41	-N	4	C		.31				DE
MCMA	28	1540	16240	1604	N07	E01	.246	12246	28.7	44D	-N		C	1604	.31	.30			D
MEUD	28	1545	1620	1600	N08	E02	.264	12246	28.8	35	-N		C	1600	.31	.30			D
GRP47527	28	1626	1732	1632	N08	E02	.264	12246	28.8	66	--N				.68				2 2 2 4
MCMA	28	1624	1732D	1633	N08	E02	.264	12246	28.8	68D	-N		C	1633	.62	.60			E
RAMY	28	1627	1658D	1631	N07	E02	.248	12246	28.8	31D	-N	4	C		.74				DE
GRP47528	28	1732	1756	1737	N09	E03	.284	12246	1.0	24	--N				.55				4 4 4 4
HUAN	28	1728E	1735D		N09	E03	.284	12246	1.0	7D	-N	1	P	1734	.52	.54			E
PALE	28	1732	1752	1735	N09	E04	.287	12246	1.0	20	-B	3	C		.63				F H
RAMY	28	1733	1738D	1737U	N08	E03	.267	12246	1.0	5D	-N	4	V		.37				DE
MCMA	28	1733	1800	1739	N09	E01	.280	12246	28.8	27	-N		C	1739	.62	.60			E
PALE	28	1733	1752	1736	N08	E04	.271	12246	1.0	19	-B	3	V		.67				DE H
530 MCMA	28	2114	2130D	2117	N07	W02	.248	12246	28.7	16D	--N		C	2117	.26	.30			E 3
GRP47531	28	2155	2237	2200	N08	W01	.263	12246	28.8	42	1B				2.48				2 2 2 2
PALE	28	2155E	2227	2159	N07	E00	.245	12246	28.9	32D	1B	3	C		2.26				DE S
BOUL	28	2157E	2247	2200	N08	W01	.263	12246	28.8	50D	1B	3	V	2201	2.70				

SOLAR FLARES
Confirmed
FEBRUARY 1973

"Remarks":
A = Eruptive prominence, base at >90°.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No spots visible in the neighborhood.
H = Flare with high velocity dark surge.
I = Very extensive active region.
J = Plage with flare shows marked intensity variations.
K = Several intensity maxima.
L = Filaments show effects of sudden activation.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H or K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line.
S = Brightening follows disappearance of filament (same position).
T = Region active all day.
U = Close and somewhat parallel bright filaments (‖ or Y shape).
V = Occurrence of an explosive phase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα emission.
Y = Onset of a system of loop-type prominences.
Z = Major sunspot umbra covered by flare.

Note:
A line of explanation has been added before each flare event having more than one maxima. The total number of stations reporting some part of the event is given. The number of stations observing at the time of the principal maximum but not reporting the event is given in the second statement. Care should be exercised in utilizing the numbers in the remarks column. The first number is the number of stations reporting the individual maximum, and not the total number of stations reporting some part of the flare event. The last number is the number of stations reporting at the time of the individual maximum and not necessarily the total number of stations observing during the flare event. GRP numbers may appear several times in order to indicate secondary maxima. An asterisk beside an importance indicates a secondary maximum. The word "GRP" has also been omitted to aid in pointing to this condition.
When it is impossible to determine the time of Maximum Phase from the individual reports the time of Area Measurements is used. This time appears in parentheses. For Flares reported by only one station the last 3 digits of the group number appear to the left of the station code.

In the importance column "--" signifies the subflare has been confirmed by the NOAA grouping program but is not included in the I.A.U. Quarterly Bulletin on Solar Activity. These subflares are also not included in the Flare Index below.

DAILY FLARE INDICES

Date	Flare Index	HR OBS	Date	Flare Index	HR OBS	Date	Flare Index	HR OBS
730201	23.30	22.9	730212	48.21	22.3	730221	1.54	19.4
730202	3.57	20.7	730213	9.69	19.6	730222	68.22	21.5
730203	0.00	23.9	730214	10.05	18.8	730223	8.16	21.7
730205	0.00	22.7	730215	11.47	22.9	730224	6.40	22.7
730206	0.00	22.6	730216	40.79	23.2	730225	1.43	24.0
730207	0.00	22.5	730217	5.78	22.3	730226	0.00	23.4
730208	0.00	23.7	730218	37.04	23.6	730227	30.71	22.0
730210	0.00	23.7	730219	24.40	22.8	730228	46.18	24.0
730211	3.64	23.5	730220	4.45	22.6			

When no Flare Index is given, it is 0 for that day.

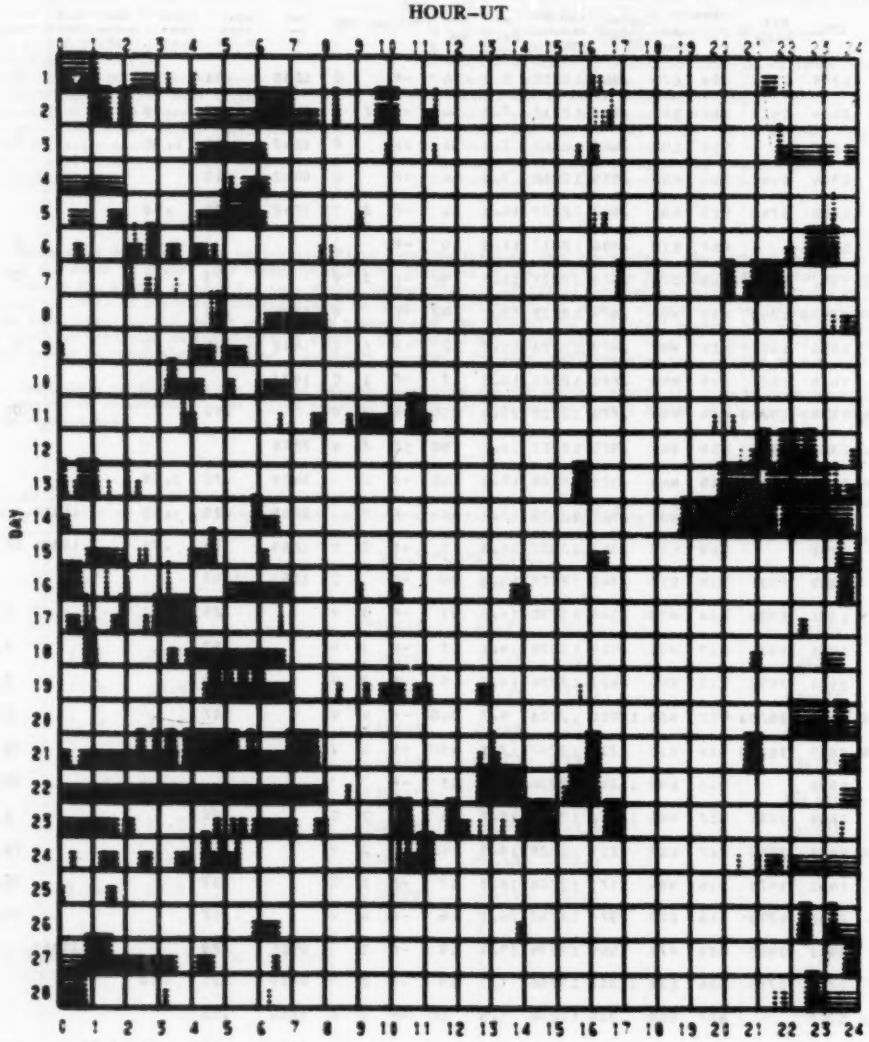
SOLAR FLARES
Unconfirmed
FEBRUARY 1973

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS					REMARKS	
	DATE FEB	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH ½σ	MAX. INT. %		
364 MEUD	01	1229	1235	1230	S09	E75	.963	12212	7.1	6	-F		C	1230	.31				D	4
373 MANI	04	0410	0424	0413	S07	E41	.652	12212	7.2	14	-F	2		0413	.31	.59				3
377 KODA	05	0204	0242		S08	E28	.467	12212	7.2	38	1N		P	0242	2.94	2.90			D	3
381 MONT	07	0940	0944	0942	S06	W04	.070	12212	7.1	4	-F		C	0942	.10					4
388 MANI	10	0739	0750	0742	S15	E84	.992	12227	16.6	11	-F	2		0742	.21	.58				5
389 ISTA	10	0851	0900		N07	E19	.396	12217	11.8	9	-F								D	5
392 RAMY	10	1948E	1957	1948U	S16	E78	.973	12227	16.7	9D	-F	3	V		.23				DE	3
413 ZURI	14	1349E	1353D	1349	N15	W58	.879	12223	10.2	4D	-F		P	1349	.63					5
414 HUAN	14	1358	1410	1400	N15	W58	.879	12223	10.2	12	-N	1	C	1400	.36	.73			D	5
415 HUAN	14	1418	1425	1421	N15	W59	.886	12223	10.2	7	-F	1	C	1421						5
416 ATHN	14	1520E	1535D	1520U	N14	W58	.876	12223	10.3	15D	-N	2	V		.50				DE	4
418 BOUL	14	2253E	2302	2256	N16	W65	.929	12223	10.1	9D	1F	2	V	2256						1
424 MANI	15	0508E	0622	0609	N15	W64	.921	12223	10.5	14D	-B	1		0609	.72	1.50				1
425 CATA	15	0745	0755	0745	N15	W65	.927	12223	10.4	10	-N	3		0745	.29	.75		(191)		3
428 CAPS	15	1205	1211		S18	E17	.342	12227	16.8	6	-B	2	S	1209	.70	.70		(237)	CH	4
429 ZURI	15	1300	1325	1302	S18	E17	.342	12227	16.8	25	-F		C	1302	1.47					5
432 PALE	15	1924	1951	1926	N13	W23	.504	12230	14.1	27	-F	3	V		.26				F	3
433 PALE	15	1924	1951	1936	N13	W23	.504	12230	14.1	27	-N	3	V		.52				F	3
434 PALE	15	2005	2010	2006	S13	W25	.428	12224	14.0	5	-F	3	V		.46				F	3
440 TEHR	16	0625E	0645	0625U	N12	W88	1.000	12223	9.7	20D	-N	4	V		.87				F	2
442 TEHR	16	0842E	0857	0842U	S16	E10	.232	12227	17.1	15D	-N	4	V		.33				DE	7
443 ISTA	16	1015	1030		N18	E90	1.001	12236	23.2	15	-F								AD	4
447 TEHR	17	0631	0645	0631	N12	W88	1.000	12217	10.7	14	-N	2	C		.28				F	1
458 ATHN	18	0823E	0837	0825	S17	E07	.211	12228	18.9	14D	-F	3	V		.50				DE	3
459 ATHN	18	1425	1442	1428	S16	W04	.171	12228	18.3	17	-F	2	C		.33				DE	4
465 TEHR	20	0756	0802	0758	S18	E79	.976	12240	26.3	6	-N	4	V		.17				DE	7
466 CATA	20	0300	0910	0905	N09	W72	.959	12239	15.0	10	-N	1		0905	.29			(186)		3
480 MANI	23	0702	0715	0705	N06	E88	1.000	12246	1.9	13	-N	2		0705	.21	.64				3
496 HUAN	24	1303E	1310		N07	E68	.935	12246	1.6	1D	-F	1	P	1310	.26					3
502 KODA	25	0221	0232	0224	N08	E58	.864	12246	1.4	11	-B		P	0231	1.99	1.98	2.00		D	4
508 MANI	25	2356E	0003	2356	N17	E73	.971	12252	3.5	7D	-F	2		2356	.52	1.25				3
522 MEUD	28	1230	1236	1231	N03	E11	.259	12246	1.3	6	-F		C	1231	.21	.20			D	7
524 MEUD	28	1407	1412	1408	N08	E19	.411	12246	2.0	5	-N		C	1408	.31	.30			D	7
525 ZURI	28	1413	1431	1417	N05	E11	.283	12246	1.4	18	-N		C	1417	1.47					7
529 RAMY	28	1824E	1843D	1824U	N07	E01	.246	12246	28.8	19D	-F	3	V		.23				DE	3

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

FEBRUARY 1973



Observatories included in total patrol:

Arcetri	Capri-S (Swedish)	Istanboul	Meudon	Ramey
Athenes	Catania	Kodaikanal	Mitaka	Tehran
Boulder	Herstmonceux	Locarno	Monte Mario	Upice
Bucharest	Huancayo	Manila	Ondrejov	Wendelstein
		McMath-Hulbert	Palehua	Zürich

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1973

FEB. 1973	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
1	2695	CANR	3	1742	1743	1.5	3.0	1.0		
	4995	CANR	3	1743	1744	1.5	8.0	3.0		
	1420	CANR	3	1743.5	1744.5	2	2.0	1.0		
	18	MCMA	6	2043	2046	6			2	
3	100	HIRA	5	0143.5	0143.5	.5	50.0	20.0		
	930	BORD	20	1406	1407.5	15	11.0	4.0		
	237	TRST	45	1421.5	1421.6	.4	230.0	33.0		
	2800	OTTA	24	1430		35	1.7			
	245	SGMR	6	1747.1	1750.5	5.2	20.5	3.5		
	410	SGMR	6	1749.6	1750.5	1.4	3.2	1.0		
	1420	BOUL	3	1752	1754.5	3.5	2.0	1.0		
	18	MCMA	6	2235	2237	3			2	
4	100	HIRA	45	0303.3	0304.2	2.5	40.0	15.0		
	930	BORD	3	1337	1338	4	15.0	3.0		
	2800	OTTA	20	1635	1645	40	.8	0.4		
5	9400	HUAN	20	1741.3	1816.2	65.1	9.4	3.9		
	2800	OTTA	1	2031.5	2032	1.7	.7	0.4		
6	7000	SAOP	22	1329.8		20.7	5.8			
	2800	OTTA	20	1605	1640	60	1.2	0.6		
	10700	PENN	20	1748.8	1852.2	119	8.1	4.1		
	2800	OTTA	1	1834	1836.2	4	1.4	0.7		
7	100	HIRA	45	0001 E	0001.5	1 D	50.0U	20.0U		
	260	ONDR	8	0851.5	0851.5	.5	20.0			
	260	ONDR	45	1127	1127.5	3	20.0			
	2800	OTTA	40	1253	1257	25	6.6			
	2800	OTTA	20	1703	1708	25	1.0	0.5		
	2800	OTTA	20	1740	1800	45	1.2	0.6		
	100	HIRA	45	2157.6	2158.5	1.5	150.0	70.0		
	100	HIRA	45	2340	2340.1	1.5	130.0	30.0		
8	100	HIRA	45	0201.5	0201.9	1	100.0	40.0		
	7000	SAOP	22	1409.9		18.3	7.2			
9	100	HIRA	5	0023.8	0023.8	1	75.0	25.0		
	2830	ARCE	20	0847.9	0904.4	96				
	9285	ARCE	20	0902	0926.2	77				
	408	TRST	45	0956.4	0956.7	.5	49.0	16.0		
	260	ONDR	3	0956.5	0957	1	25.0			
	237	TRST	45	0956.5	0956.6	.4	48.0	9.0		
	408	TRST	41	1106.3E	1106.6	1.5D	30.0			
10	2800	OTTA	20	1342	1347	12	1.2	0.6		
	2800	OTTA	20	1355	1430	195	6.0	3.0		
	260	ONDR	45	1404.5	1407	18.5	40.0			
	237	TRST	45	1405.9	1406	.5	73.0	24.0		
	2695	ATHN	20	1408.8	1425.7	53.3	4.6	2.3		
	1415	ATHN	20	1408.5	1425.5	49	1.5	1.0		
	4995	ATHN	20	1409.6	1425.8	45.6	6.0	3.6		
	606	SGMR	20	1410	1426.5	30.3	1.3	.5		
	4995	SGMR	22	1412.2	1427	55	8.4	3.5		
	8800	ATHN	20	1413.7	1425.8	40.2	4.9	3.3		
	2695	SGMR	20	1415.1	1426	52.9	2.5	1.0		
	8800	SGMR	20	1416.3	1426.4	43.3	4.1	2.0		
	30	UPIC	45	1422	1433	18				
	1415	SGMR	20	1423.7	1426.9	12	1.5	1.0		
	245	SGMR	6	1423.5	1424	2.2	1.0	.5		
	7000	SAOP	22	1436.7		8.2	3.5			
	7000	SAOP	8	1658.6	1658.6	.6	7.2	3.5		
	2800	OTTA	20	2055	2058	13	1.8	0.9		
11	9400	TYKW	20	0426	0429	25	8.0	3.0		
	3750	TYKW	20	0427	0429	25	2.0	1.0		
	18	MCMA	6	2235	2238	6			2	
	9400	TYKW	3	2324	2327	4	9.0	4.0		
	3750	TYKW	1	2325	2327	3	2.0	1.0		
12	3000	BERL	20	1206.3	1222.5	78	6.1			
	1500	BERL	20	1207.5	1230	59	2.9			
	2800	OTTA	22	1458	1550	90	1.6	0.8		
	4995	CANR	3	1521	1522	2	8.0	3.0		
	7000	SAOP	8	1626.2	1626.4	.7	8.1	4.0		
	2800	OTTA	22	1630	1815	230	2.2	1.1		
	4995	CANR	3	1719	1720	2.5	5.0	2.0		
	2800	OTTA	20	2035	2140	195	2.2	1.6		
13	4995	CRON	3	0824	0825	1.5	6.0	2.0		
	930	BORD	1	1130	1130.6	1	12.0	1.0		
	9400	HUAN	20	1348.5	1354.9	167.4	9.8	2.1		
	2695	CANR	3	1350	1353	6	7.0	3.0		
	4995	CANR	3	1351.5	1353.5	8	5.0	2.0		
	2830	ARCE	20	1351.2	1353.8	5.5				
	2800	OTTA	21	1351	1410	40	2.2	1.1		
	9285	ARCE	20	1352.8	1354.3	5.5				
	3000	BERL	21	1352	1406.7	22	2.4			
	3000	BERL	1	1352	1354	6	3.3			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1973

FEB. 1973	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
	2700	PENN	1	1352.8	1353.9	3.3	5.3	3.8		
	1500	BERL	21	1352	1356+2	8	2.1			
	2800	OTTA	1	1353	1354	4	4.2	2.1		
	1500	BERL	1	1353.1	1353.4	.4	2.5			
	1420	CANR	3	1353.5	1355	5	1.0			
	1420	ARCE	21	1353.1	1410.8					
	1420	ARCE	1	1353.1	1353.3	.5				
	1500	BERL	1	1354.5	1354.6	.4	4.7			
	1420	ARCE	1	1354.2	1354.4	.4				
	7000	SAOP	22	1355.9		12.5	8.0			
	2800	OTTA	21	1500	1805	250	2.6	1.3		
	2800	OTTA	1	1719	1721	7	1.0	0.5		
	18	MCMA	6	1725	1729	5			1	
	2695	PENT	1	2203.5	2203.8	1	3.8	1.6		
	200	HIRA	45	2319.4	2319.9	.8	140.0	40.0		
14	100	GORK	41	0921.4	0921.8	2.3	55 .0			
	100	GORK		0922.7			25.0			
	100	GORK	41	0947.2	0947.6	5.4	100.0D			
	100	GORK		0947.2	0950.2		30.0			
	100	GORK		0947.2	0951.4		100.0			
	536	ONDR	45	1246.5	1247.5	5	70.0			
	606	SGMR	1	1247	1247.6	2.2	5.2	2.6		
	410	SGMR	6	1247	1247.4	4.6	13.4	6.0		
	245	SGMR	6	1247	1247.2	4.9	59.0	20.0		
	237	TRST	42	1247	1247.1	3	150.0			
	30	UPIC	45	1247.3	1248	6.5				
	260	ONDR	44	1247	1335	113	60.0			
	245	SGMR	43	1251.9	1543.2	558.1D	250.0			
	245	BOUL	42	1514	2022	535 D			1	
	930	BORD	1	1358	1358.2	1	11.0	1.0		
	245	BOUL	42	1413	1414	32			1	
	2800	OTTA	20	1508	1534	60	2.2	1.1		
	7000	SAOP	20	1650.2		29.1	6.4			
	2800	OTTA	23	1830	2020	210	3.2	1.8		
	2700	PENN	20	1836.4	1908.8	69.5	9.2	3.9		
	1420	BOUL	8	1847	1847.5	1	3.0	1.0		
	960	PENN	24	1857.4	2050.7		2.1			
	2800	OTTA	22	1901.5	1903	12	2.4	1.4		
	410	SGMR	6	1901.2	1903.5	19.4	6.3	1.5		
	18	BOUL	6	1901	1903	3			1	
	7000	SAOP	22	1922.5		35.4	11.6			
	410	SGMR	6	1923	1926.6	15.2	9.9	2.0		
	2800	OTTA	46	1925	1929.3	7	5.4	2.1		
	960	PENN	1	1925.3	1927.3	6.4	2.9	1.6		
	606	SGMR	40	1925.2	1929.2	5.1	11.5	4.5		
	245	SGMR	6	1925	1927.2	6.3	35.0	7.0		
	2700	PENN	1	1926.8	1929.4	4.8	9.5	4.1		
	2695	BOUL	45	1926.5	1929.5	5	6.0	2.0		
	1420	BOUL	45	1926.5	1927.5	3.5	2.0	1.0		
	1415	SGMR	1	1927.1	1929.5	6.4	.6	.3		
	2700	PENN	24	2007.3	2120		5.4			
	4995	BOUL	45	2050	2054	5	33.0	11.0		
	2800	OTTA	46	2050.5	2054.6	5	21.0	5.5		
	8800	SGMR	4	2051.7	2054.7	5.9	51.7	12.0		
	4995	SGMR	46	2051.6	2052.5	3.9	10.3	5.0		
	4995	SGMR	46		2054.7		20.5			
	2700	PENN	45	2051.3	2054.7	4.3	32.1	6.7		
	2695	SGMR	46	2051.7	2052.5	4.3	2.4	3.5		
	2695	SGMR	46		2054.6		13.4			
	2695	BOUL	45	2051	2055	7.5	22.0	6.0		
	18	BOUL	41	2051	2053	6			1	
	9400	HUAN	3	2052.9	2054.5	4.7	51.3	14.6		
	15400	SGMR	3	2053.8	2054.6	2.6	24.2	6.0		
	10700	PENN	3	2053.8	2054.7	3.6	32.8	10.0		
	410	SGMR	6	2053.7	2054.6	3.8	11.8	2.0		
	1420	BOUL	8	2054	2055	1.5	5.0	2.0		
	1415	SGMR	1	2054	2054.7	4.6	4.0	1.5		
	960	PENN	1	2054.6	2054.7	.5	1.1	0.9		
	606	SGMR	40	2054.6	2054.7	5.5	10.4	2.0		
	2800	OTTA	30	2055.5		3	1.4	0.7		
	2800	OTTA	45	2056	2057.2	1.7	1.6	0.8		
	100	HIRA	27	2125 E	2301	120 E	30.0	10.0		
	2695	PENT	21	2210	2222	20	1.8	0.9		
	2695	PENT	2	2212.2	2216	5	8.2	4.1		
	2695	BOUL	45	2212.5	2216	12	10.0	3.0		
	1420	BOUL	40	2212	2214	4	11.0	3.0		
	2695	PENT	20	2233	2238	10	1.4	0.7		
	2695	PENT	24	2245		6	1.8			
	1420	BOUL	45	2256	2257	2	4.0	1.0		
	3750	TYKW	1	2257	2258	6	2.0	1.0		
	2695	PENT	1	2257	2257.5	2	1.8	1.0		
	2695	BOUL	3	2257.5	2258	2	5.0	2.0		
	2000	TYKW	1	2257	2257.8	6	2.0	1.0		
	1000	TYKW	45	2257	2257.2	3	6.0	2.0		
	3750	TYKW	20	2306	2307.2	12	3.0	1.0		
	100	HIRA	45	2306.5	2307.1	2.5	110.0	60.0		
	9400	TYKW	1	2307	2307.2	1.5	3.0	1.0		
	2695	PENT	1	2307	2307.1	1.5	1.0	0.5		
	4995	BOUL	3	2320	2322.5	4	9.0	3.0		

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FEB. 1973	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
	606	MANI	4	2320.6	2321	.9	11.1	2.6		
	3750	TYKW	1	2321	2322.9	4	5.0	2.0		
	9400	TYKW	1	2322	2323	3	4.0	2.0		
	2695	PENT	1	2322	2302.9	2	1.8	0.9		
	2695	BOUL	3	2322.5	2323.5	2	5.0	2.0		
15	3750	TYKW	1	0515	0515.7	2	6.0	1.0		
	2000	TYKW	8	0515	0515.7	1	78.0	20.0		
	1420	CRON	8	0515	0516	1.5	8.0	3.0		
	606	MANI	4	0602.4	0602.8	1.1	16.5	5.9		
	1415	MANI	4	0721.7	0722	.8	55.2	14.7		
	606	MANI	4	0721.7	0722	.8	30.2	8.6		
	260	ONDR	44	0730	1311.5	440	60 .0			
	245	SGMR	44	1146 E	1314.9	625 D	46.8			
	7000	SAOP	32	1340.5		6.7	-7.0			
	930	BORD	20	1521	1529	99	10.0	4.0		
	9400	HUAN	20	1632.3	1642	27.9	7.7	4.5		
	2800	OTTA	26	1715		15	1.4			
	2800	OTTA	21	1800	1830	115	2.0	1.0		
	2800	OTTA	1	1806.5	1808	2	1.0	0.5		
	2695	BOUL	3	1808.5	1808.5	1	3.0	1.0		
	9400	TYKW	3	2359	2359.7	1.5	9.0	3.0		
	3750	TYKW	1	2359	2359.8	3	3.0	1.0		
16	1000	TYKW	1	0014	0016	4	4.0	1.0		
	1420	CRON	45	0015	0016	2	7.0	3.0		
	100	HIRA	45	0016.9	0017.5	1.5	110.0	30.0		
	100	HIRA	5	0059.9	0059.9	.5E	80.0	50.0		
	100	GORK	6	0607.5	0607.7	1.4	150.0D			
	200	HIRA	45	0618	0618.2	1	170.0	45.0		
	100	GORK	44	0640		71		5.0		
	260	ONDR	41	0800	0825	150	25.0			
	3000	BERL	20	1110	1229.3	108	3.5	1.4		
	1500	BERL	20	1110			.4E			
	930	BORD	1	1336	1336.9	4	18.0	4.0		
	18	MCMA	6	1607	1610	4			3	
	245	BOUL	41	1622	1626	6			1	
	18	BOUL	41	1835	1841	6			1	
	2800	OTTA	21	1840	1925	80	1.4	0.7		
	7000	SAOP	22	1851.3		6.5E	11.8			
	410	SGMR	6	1851.8	1854.3	12.1	3.4	1.6		
	2695	SGMR	1	1852.9	1854.2	8.5	2.5	1.2		
	1415	SGMR	20	1852.7	1854.3	11.3	2.0	1.0		
	245	SGMR	6	1852	1853.7	16.7	21.8	8.9		
	2800	OTTA	1	1853	1854.2	5	2.8	1.2		
	2700	PENN	1	1853.6	1854.2	4.2	4.2	1.6		
	18	BOUL	6	1853	1857	5			2	
	18	MCMA	41	1854	1856	3			2	
	18	MCMA	6	2142	2144	4			2	
17	260	ONDR	8	0946.5	0946.5	.5	35.0			
	260	ONDR	45	1023	1025	2	25.0			
	18	MCMA	6	1934	1935	2			2	
18	9400	TYKW	8	0308	0308.2	1	10.0	3.0		
	260	ONDR	45	0935	0937	4.5	25.0			
	260	ONDR	45	0939.5	0943	5	15.0			
	2800	OTTA	22	2120	2127	130	7.6	3.4		
	245	SGMR	6	2120.6	2140.3	38.4	85.0	21.0		
	1415	SGMR	23	2121.8	2125.7	24.5	15.1	5.0		
	960	PENN	45	2121.7	2136.1		14.1			
	606	SGMR	23	2121.2	2134.2	31.8	9.0	3.0		
	410	SGMR	6	2121.8	2139.7	31.3	105.0	24.0		
	2700	PENN	3	2122.9	2126.9		10.3			
	1420	BOUL	45	2122	2126	35.5	15.0	5.0		
	2695	BOUL	21	2125	2107.5	44	10.0	3.0		
	200	HIRA	45	2125 E	2126.5	27	80.0	25.0		
	200	HIRA		2125 E	2134.5		100.0			
	200	HIRA		2125 E	2140.5		50.0			
	100	HIRA	45	2125 E	2134.5	45	30.0	10.0		
	100	HIRA		2125 E	2141.5		40.0			
	100	HIRA		2125 E	2147.8		30.0			
	606	SGMR	4	2137.1	2139.8	6.7	33.0	12.0		
	1415	SGMR	1	2139.2	2140	3	4.1	2.0		
19	2800	OTTA	20	1700		90	1.2	0.6		
	4995	CANR	3	1837.5	1839.5	3	7.0	3.0		
	2695	CANR	45	1837	1839	2.5	4.0	2.0		
20	18	MCMA	6	1340	1342	3			2	
	2800	OTTA	1	1351.3	1351.5	.5	2.2	1.1		
	7000	SAOP	8	1917.4	1918.3	.9	5.4	2.9		
21	2800	OTTA	24	1300		3	1.8			
	237	TRST	5	1426.2	1426.3	.2	100.0	30.0		
22	9500	BERL	20	0804	0810	13	3.4	1.3		
	2695	CANR	3	0826	0826.5	1.5	3.0	1.0		
	2830	ARCE	20	1240	1320.1	71				
	9285	ARCE	21	1241.2	1320.6	80				

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FEB. 1973	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
	15400	SGMR	3	1254.2	1254.4	1.4	18.2	5.0		
	10700	PENN	3	1254.4	1254.6	1.6	30.6	8.8		
	10500	BERN	3	1254.3	1254.5	3	30.0			
	9500	BERL	3	1254	1254.4	1.5	29.0	9.5		
	9285	ARCE	3	1254.4	1254.7	1.7				
	8800	SGMR	3	1254.3	1254.6	3.5	37.8	7.0		
	4995	SGMR	1	1254.4	1254.6	1.7	4.3	2.0		
	9285	ARCE	1	1304.9	1305.4	.7				
	9500	BERL	22	1314	1320	22	12.0	2.6		
	4995	SGMR	20	1318	1324.6	34.3	8.6	4.0		
	2700	PENN	20	1318.9	1320.1	36.9	8.0	2.3		
	8800	SGMR	22	1319.1	1321.6	29.4	5.2	2.0		
	3000	BERL	3	1319	1320	13	3.6	1.4		
	2800	OTTA	1	1319	1320	4	2.6	1.2		
	2695	SGMR	20	1319.5	1321.1	30.7	2.2	1.0		
	2695	CANR	3	1319	1319.5	2.5	3.0	1.0		
	10700	PENN	24	1430.2	1449.8		32.4			
	2800	OTTA	20	1435	1525	110	2.0	1.0		
	2695	CANR	3	1637.5	1640	6	3.0	1.0		
	930	BORD	45	1639	1639.5	1	37.0	2.0		
	4995	CANR	3	1646.5	1647	1	8.0	2.0		
	18	BOUL	6	1801	1802	4			1	
	18	BOUL	41	1921	1924	7			1	
	18	MCMA	41	1927	1929	7			2	
	18	BOUL	42	1944	1947	6			1	
	18	MCMA	6	1945	1946	2			1	
	100	HIRA	45	2152.5	2153.2	1 D	50.0	30.00		
	8800	MANI	3	2349.5	2350.3	2	39.9	13.3		
	4995	MANI	1	2349.5	2350.4	1.3	5.9	2.9		
	9400	TYKW	8	2350	2350.3	1	29.0	10.0		
23	200	GORK	44	0227		447 D		5.0		
	3750	TYKW	1	0622	0623.3	4	4.0	1.0		
	30	UPIC	45	0832	0833	9				
	245	SGMR	44	1133 E	1248.7	648 D	11.7			
	7000	SAOP	20	1148.7		5.1	4.7			
	4995	CANR	3	1149.5	1151	4.5	8.0	2.0		
	2800	OTTA	1	1242.8	1243.2	1	1.2	0.5		
	1420	ARCE	20	1307.3	1315.9	26				
	2830	ARCE	20	1309.6	1316.4	24 U				
	18	MCMA	41	1955	1956	4			2	
	2800	OTTA	20	2125	2130	10	1.6	0.8		
	3750	TYKW	1	2308	2309	6	5.0	2.0		
24	200	GORK	44	0210 E		170 D		5.0		
	606	MANI	4	0655.5	0655.9	.7	12.5	1.6		
	7000	SAOP	22	1134.6		49	9.2			
	7000	SAOP	32	1223.7		5.1	4.6			
	2800	OTTA	20	1520	1610	300	3.8	1.6		
	2700	PENN	20	1528.3	1609.4	126	4.9	2.5		
	1420	CANR	45	1805.5	1808.5	4	2.0	1.0		
	2700	PENN	8	1905.3	1905.4	.2	6.1			
	960	PENN	3	1905.2	1905.4	.5	17.8	6.5		
	18	MCMA	41	1910	1912	3			3	
	1420	BOUL	3	2223.5	2224	1	1.0			
	100	HIRA	45	2223.4	2223.5	3	90.0	25.0		
	2695	PENT	1	2323.1	2323.2	1	9.0	2.2		
25	100	HIRA	45	0229	0230	2	40.0	15.0		
	3750	TYKW	1	0517.5	0518	1	2.0	1.0		
	2695	CANR	45	0752	0754.5	5.5	8.0	3.0		
	1420	CANR	45	0752.5	0757	6.5	4.0	1.0		
	4995	CANR	45	0753	0755	4.5	12.0	4.0		
	4995	CANR	3	0815	0815.5	1.5	8.0	3.0		
	2695	CANR	3	0815	0815.5	2	6.0	2.0		
	2695	CANR	3	0815.5	0819	1.5	5.0	2.0		
	1420	CANR	3	0815.5	0816.5	2	2.0	1.0		
	1420	CANR	3	0819.5	0820	1	2.0	1.0		
	315	DWIN	41	1633	1634	3	57.0	20.0		
	2695	CANR	3	1644.5	1645.5	2.5	4.0	1.0		
	2700	PENN	1	1645.4	1646	1.7	3.8	1.7		
	2695	PENT	1	1645	1646	2.5	2.0	1.0		
	2695	BOUL	3	1646	1646.5	1	4.0	1.0		
	18	BOUL	6	1917	1919	4			2	
	18	MCMA	41	1919	1921	3			2	
	18	MCMA	41	1941	1943	5			3	
26	9400	TYKW	1	0202	0202.5	1.5	6.0	3.0		
	9285	ARCE	20	0931.2	0947.3	34				
	4995	CRON	3	0945.5	0946.5	2.5	9.0	3.0		
	2695	CRON	3	0945.5	0946.5	3	6.0	2.0		
	2695	CRON	3	0945.5	0946.5	3	6.0	2.0		
	9500	BERL	1	0946.3	0948.5	2.5	5.3			
	4995	CANR	3	0946.5	0947.5	6	8.0	3.0		
	3000	BERL	2	0946	0946.8	3.5	3.7	1.4		
	2830	ARCE	2	0946.4	0946.9	3.5				
	2695	CANR	3	0946	0946.5	4	6.0	2.0		
	1500	BERL	46	0946.5	0947.8	3	8.4	3.4		
	1420	CRON	45	0946.5	0948	5.5	10.0	4.0		
	1420	ARCE	45	0946.6	0947.2	3.3				

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FEB. 1973	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
	1420 ARCE		0946.6	0947.2	1				
	408 TRST	41	0946.7	0947.7	1.6	47.0			
	315 DWIN	45	0946	0947	4	70.0	35.0		
	283 DWIN	45	0946	0947	4	125.0	30.0		
	260 ONDR	45	0946.5	0946.5	11	90.0			
	237 TRST	45	0946.3	0947	3.7	900.0	89.0		
	113 POTS	45	0946.6	0946.7	.9	100.0	15.0		
	1420 CANR	45	0947	0948.5	4.5	6.0	2.0		
	1420 ARCE		0947.6	0947.8	2.3				
	234 POTS	45	0947	0947	.1	250.0	60.0		
	9285 ARCE	20	1227.8	1319	146 U				
	2830 ARCE	22	1239	1316.2	60 U				
	1420 ARCE	23	1304.7	1339.6	79 U				
	1420 ARCE	45	1327.8	1328.9	1.6				
	1420 ARCE		1327.8	1328.1	.7				
	1420 ARCE		1328.5	1328.9	.9				
	245 SGMR	6	2009.6	2011.9	3.5	57.0	9.0		
	2800 OTTA	1	2010	2012.1	7	3.4	1.2		
	2695 SGMR	1	2010.5	2012.5	3.9	3.2	1.7		
	1420 BOUL	3	2010.5	2012.5	6	3.0	1.0		
	1415 SGMR	1	2010	2012.4	4.9	7.7	3.5		
	606 SGMR	1	2010.6	2012.5	2.6	3.0	1.5		
	410 SGMR	6	2010.3	2012.3	3.3	8.2	2.5		
	2700 PENN	1	2011.1	2012.2	2.8	3.7	1.0		
	2695 BOUL	3	2011	2012.5	5.5	5.0	2.0		
	960 PENN	1	2011.2	2012.2	2.7	5.8	2.8		
	2700 PENN	20	2045.6	2050.6	19.8	6.3	3.1		
	2800 OTTA	22	2047	2050.5	12	3.4	1.7		
	2695 BOUL	3	2047.5	2051	5.5	4.0	1.0		
27	3750 TYKW	20	0206	0209.8	15	7.0	2.0		
	1420 CRON	3	0207.5	0208.5	5.5	9.0	3.0		
	2000 TYKW	1	0209	0210	2	2.0	1.0		
	650 GORK	22	0219 E	0300	161	3.4	1.2		
	650 GORK	4	0552.6	0557	6	2.5	1.2		
	650 GORK	4	0750	0753	3.9	2.8	1.4		
	260 ONDR	41	0917	1336	297	40.0			
	315 DWIN	41	1047	1053	9	35.0	23.0		
	7000 SAOP	22	1246.6		85 U	4.3			
	315 DWIN	41	1336	1337	2	9.0	2.0		
	237 TRST	45	1336.1	1336.6	.7	69.0	13.0		
	2700 PENN	20	1339.2	1357.4	44.9	8.9	4.3		
	2800 OTTA	1	1340	1340.5	6	1.4	0.6		
	2800 OTTA	22	1350	1354	30	3.6	1.8		
	2695 BOUL	3	1608	1609	2	3.0	1.0		
	2800 OTTA	21	1700	1717	45	1.8	0.9		
	960 PENN	1	1706.5	1707.6	3	6.5	2.1		
	2800 OTTA	1	1707	1708	2	1.2	0.6		
	1420 CANR	8	1707.5	1708.5	2	10.0	4.0		
	1420 BOUL	8	1707	1708.5	2	13.0	5.0		
	2695 BOUL	3	1759.5	1800	1	4.0	1.0		
	960 PENN	1	1851.9	1852.9	3.4	7.2	0.9		
	2800 OTTA	21	1852	1853	12	1.6	0.8		
	1420 BOUL	8	1852.5	1853	2	6.0	2.0		
	1415 SGMR	4	1852.1	1852.7	5	10.1	2.0		
	606 SGMR	4	1852.2	1852.9	6.2	17.7	6.0		
	410 SGMR	6	1852.2	1852.9	2.9	36.9	7.0		
	245 SGMR	6	1852.1	1852.5	2.1	2.9	1.0		
	2800 OTTA	8	1853.8	1853.8		3.7			
	410 SGMR	43	1902.7	2001.6	113.9	7.6			
	245 SGMR	43	1902	2021.2	124	25.2			
	245 BOUL	42	1945	2021	59			1	
	2695 BOUL	3	2240	2241.5	2	4.0	1.0		
28	100 HIRA	45	0240.5	0241.2	1.2	50.0	20.0		
	200 GORK	44	0304.6U		415		5.0		
	100 GORK	44	0500		180		5.0		
	260 ONDR	44	0750	1315	440	125.0			
	315 DWIN	44	0800 F		420 D	32.0	3.0		
	283 DWIN	44	0800 E	1323	480 D	160.0D	25.0		
	100 GORK	44	0909		51		5.0		
	245 SGMR	44	1126 E	1952.5	661 D	510.0			
	245 BOUL	42	1342 E	1407	147 D			1	
	100 HIRA	45	0411.5	0412.3	3	95.0	40.0		
	200 GORK	6	0439.8	0440	.5	100.0	20.0		
	100 GORK	6	0440.3	0440.5	.3	170.0	85.0		
	200 GORK	6	0509.7	0510.1	.9	220.0	40.0		
	100 GORK	6	0509.3	0510.1	1.3	30.0	15.0		
	100 GORK	41	0726.1	0726.5	2.9	75.0			
	100 GORK		0726.1	0727.7		180.0			
	100 GORK		0726.1	0728.9		70.0			
	100 GORK	6	0739.8	0741	2.5	100.0	50.0		
	100 GORK	6	0746.1	0748.2	3.9	170.0D			
	30 UPIC	45	0835.5	0836	1				
	3000 BERL	20	0930	1114.3	297	7.1			
	30 UPIC	45	1046	1047	3				
	2800 OTTA	22	1300	1315	50	4.0	2.0		
	18 MCMA	6	1402	1405	5			3	
	2695 CANR	8	1406.5	1407.5	1.5	9.0	3.0		
	1500 BERL	46	1441.5	1443.5	2.5	16.0	3.8		

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FEB. 1973	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
28	18 BOUL	6	1532	1534	3			1	
	2800 OTTA	20	1533	1600	120	2.4	1.2		
	18 MCMA	6	1534	1536	3			2	
	9400 HUAN	20	1546.8	1612.3	74.8	9.1	4.3		
	18 BOUL	41	1609	1610	3			1	
	2800 OTTA	21	1730	1740	100	3.2	1.6		
	2800 OTTA		1730	1740	33	3.2			
	2800 OTTA		1803	1817	67	3.0			
	9400 HUAN	20	1731.3	1830.2	81.3	7.3	3.6		
	2800 OTTA	1	1732.8	1733	1.2	3.0	1.5		
	2700 PENN	40	1732.8		13.2				
	2695 SGMR	1	1732.9	1733.2	2.2	2.9	1.0		
	2695 CANR	8	1732	1732.5	1	5.0	2.0		
	606 SGMR	41	1732.9	1735.4	3.7	17.6	6.8		
	410 SGMR	6	1732.9	1733.2	3.4	98.0	38.0		
	245 SGMR	6	1732.3	1733.2	4.7	100.0	40.0		
	4995 SGMR	1	1733	1733.2	.7	1.5	.8		
	1415 SGMR	1	1733	1733.3	.9	2.2	1.1		
	7000 SAOP	22	1736.2		67.1	11.6			
	245 BOUL	42	1810	2201	350 D			2	
	9400 HUAN	46	2153.8	2157.2	47.4	109.6	46.6		
	9400 HUAN		2153.8	2158.2		129.6			
	9400 HUAN		2153.8	2204		120.5			
	4995 BOUL	45	2153	2157.5	18	127.0	23.0		
	2800 OTTA	46	2153.5	2158.2	16	96.0	20.5		
	2695 BOUL	45	2153.5	2158.5	18.5	80.0	27.0		
	606 SGMR	4	2153.7	2156.3	14.5	248.0	102.0		
	410 SGMR	7	2153.6	2156.5	18.6	472.0	188.0		
	245 SGMR	6	2153.6	2156.9	14.1	60.2	24.2		
	1420 BOUL	45	2154	2158.5	15.5	57.0	9.0		
	1415 SGMR	46	2154.3	2157.3	14.7	72.0	30.2		
	1415 SGMR	46		2158.4		47.5			
	500 HIRA	45	2154.5	2156.7	5	80.0	25.0		
	100 HIRA	45	2156.5	2203.3	12	55.0	15.0		
	18 BOUL	41	2157	2204	9			3	
	2800 OTTA	29	2209.5		52	8.4	3.0		
	100 HIRA	27	2212.5	2256	81	35.0	15.0		
	245 BOUL	42	2355	0011	33 D			1	

Observatories:

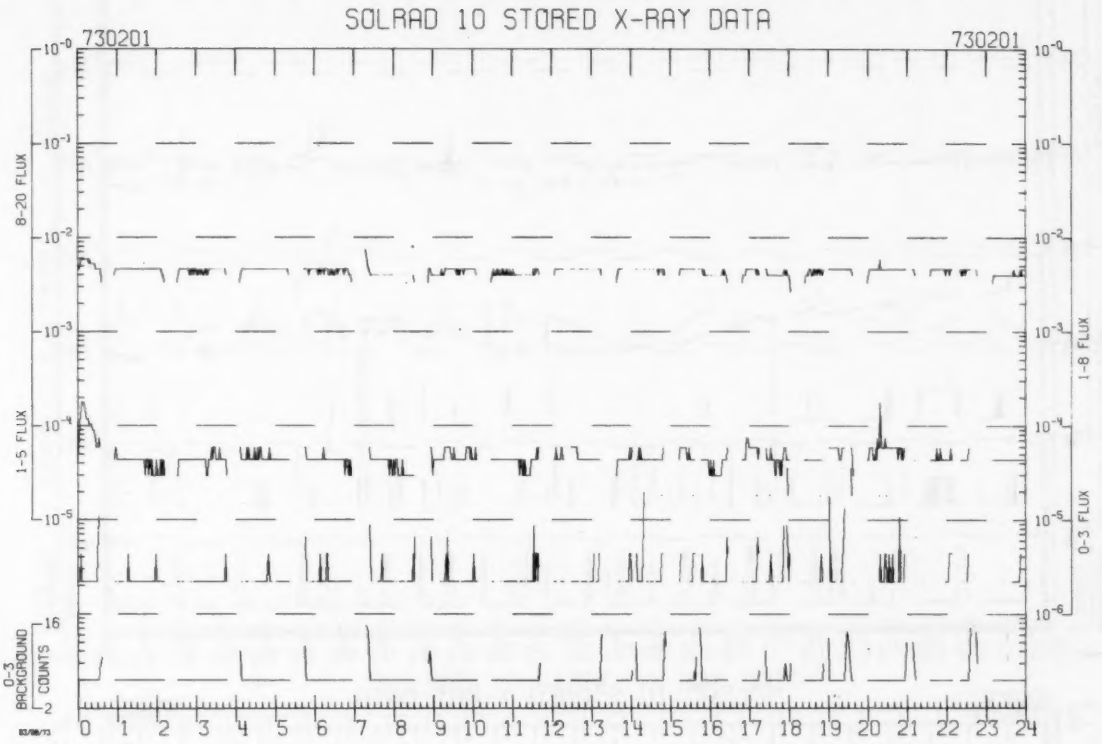
ARCE = Arcetri
BERL = Berlin-Adlershof
BERN = Berne
BORD = Bordeaux
BOUL = Boulder
CANR = Canary Islands
DWIN = Dwingeloo
CRON = Carnarvon
GORK = Gorky
HIRA = Hiraiso
HUAN = Huancayo
MANI = Manila
MCMA = McMath-Hulbert
ONDR = Ondrejov
OTTA = Ottawa ARO
PENN = Penn. State Univ.
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SLOU = Slough
SGMR = Sagamore Hill
TRST = Trieste
TYKW = Toyokawa
UPIC = Upice
VORO = Voroshilov

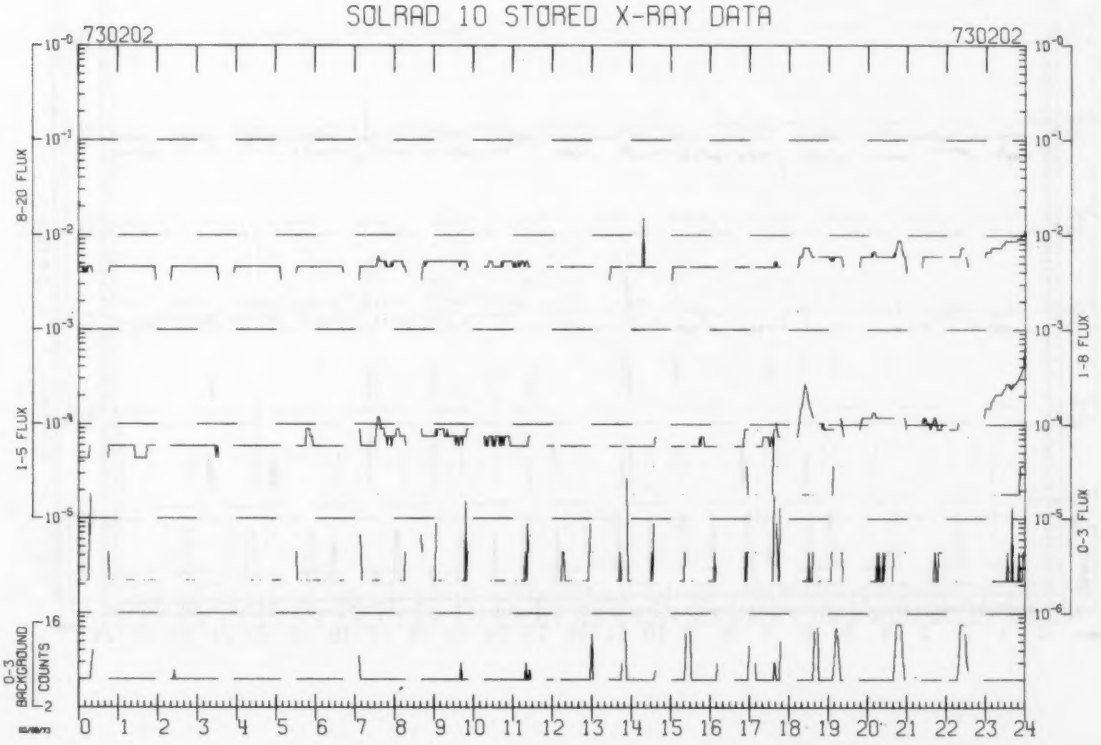
Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SOLAR X-RAYS MEASURED BY SATELLITE SOLRAD 10 - EXPLORER 44

FEBRUARY 1973





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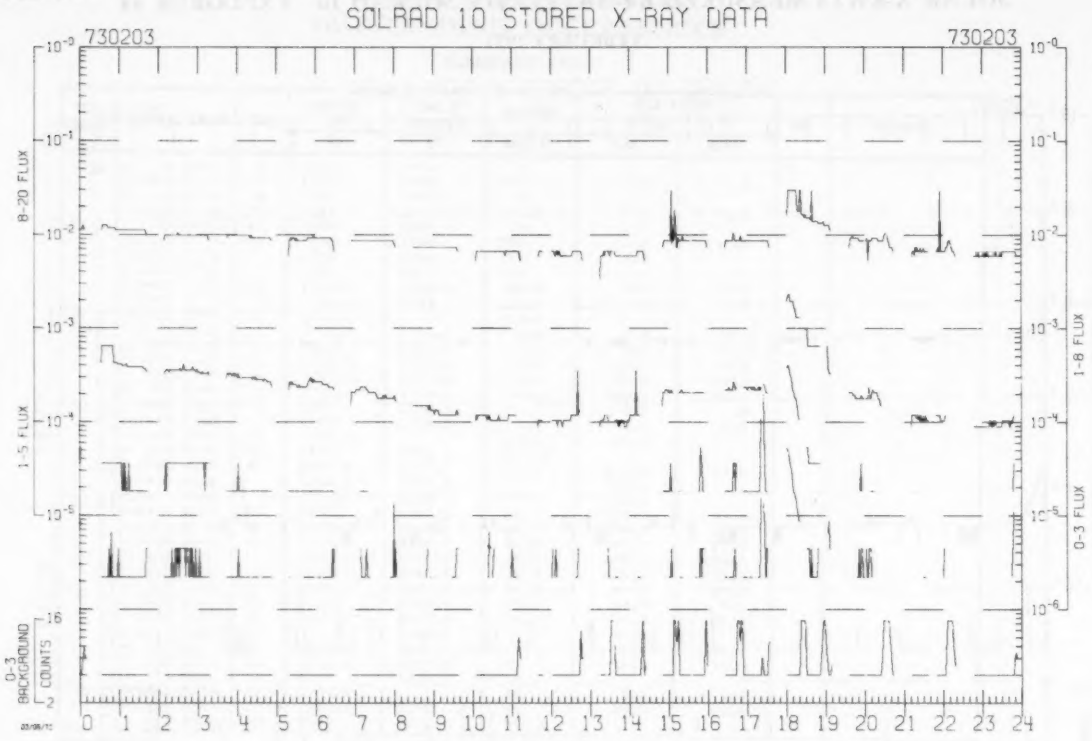
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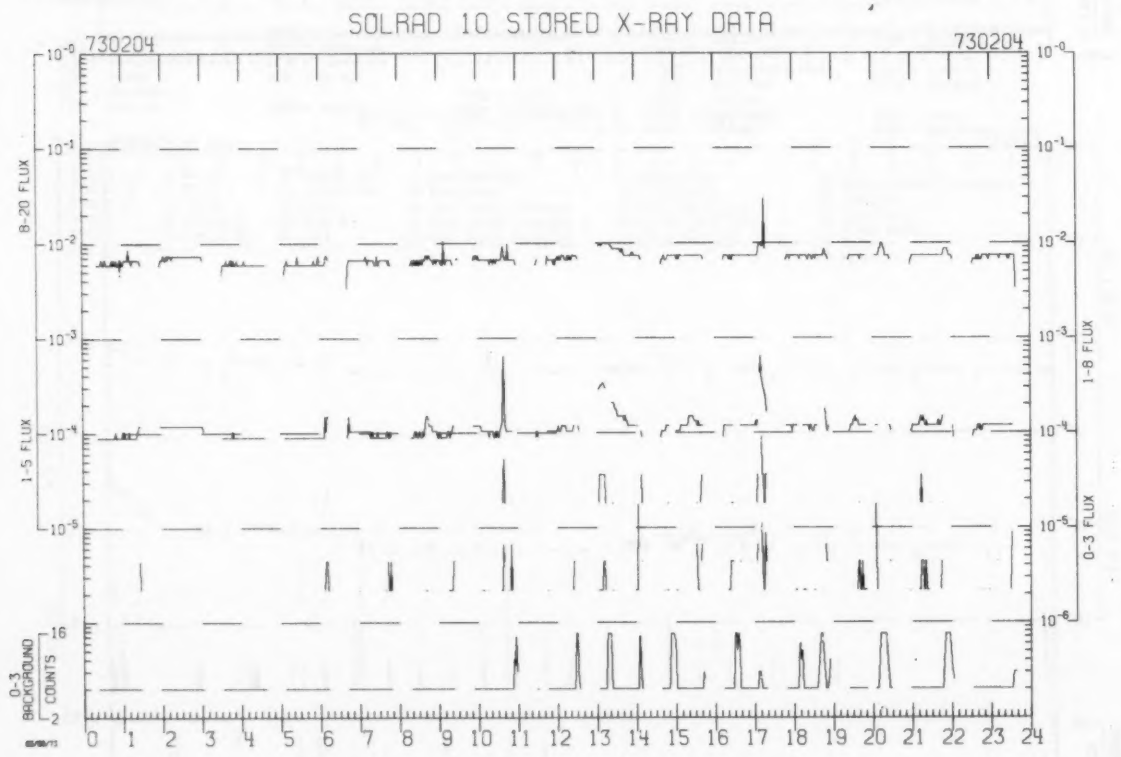
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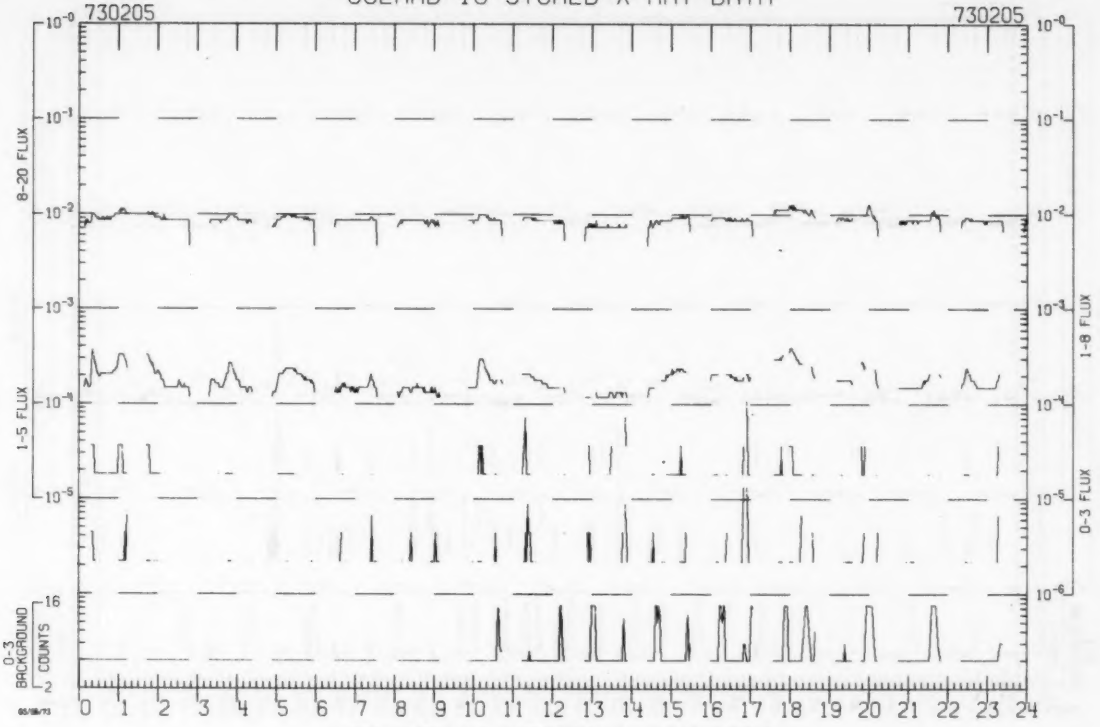

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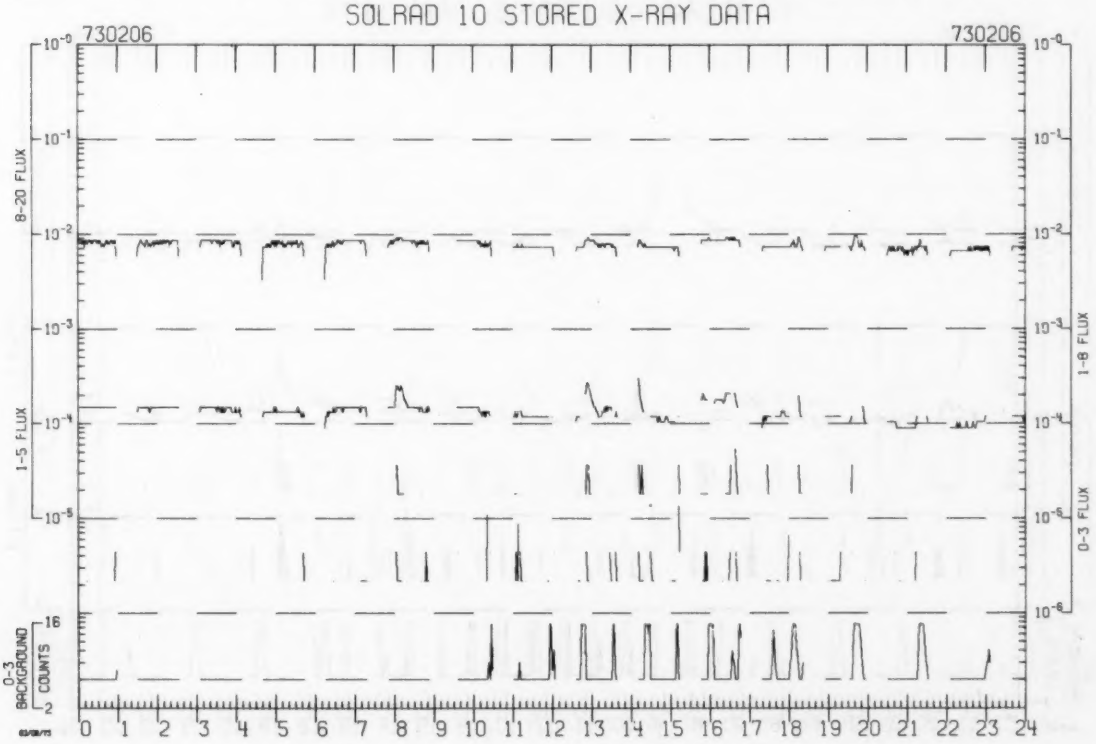

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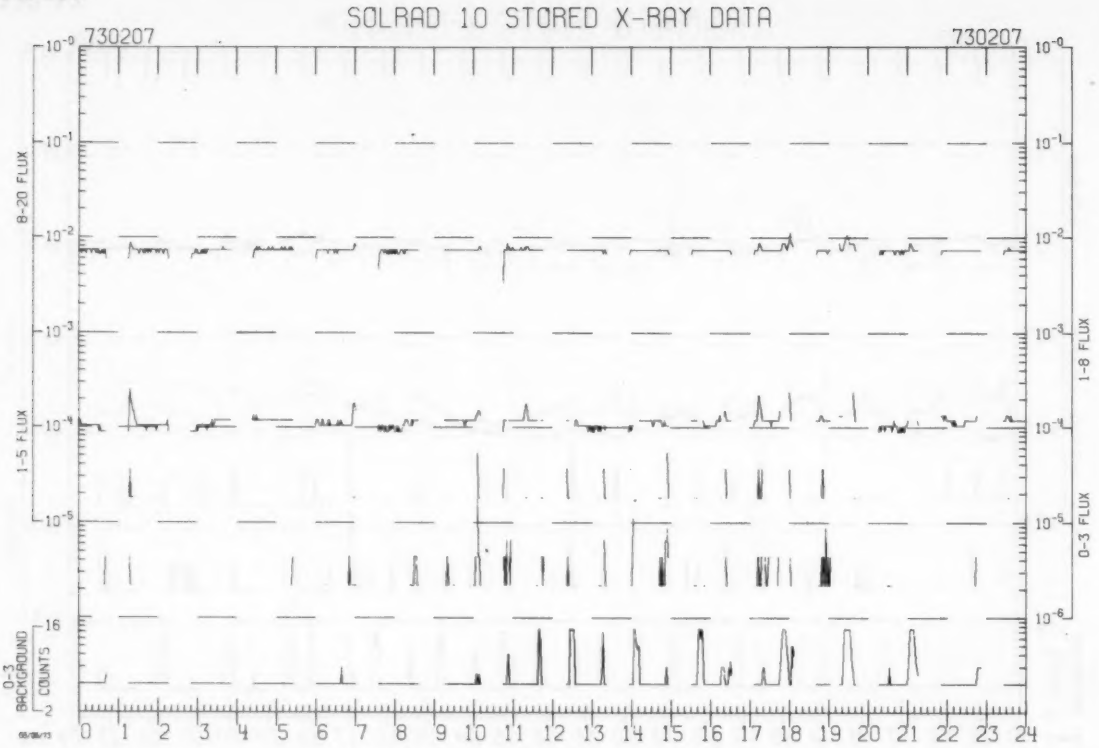
Feb 73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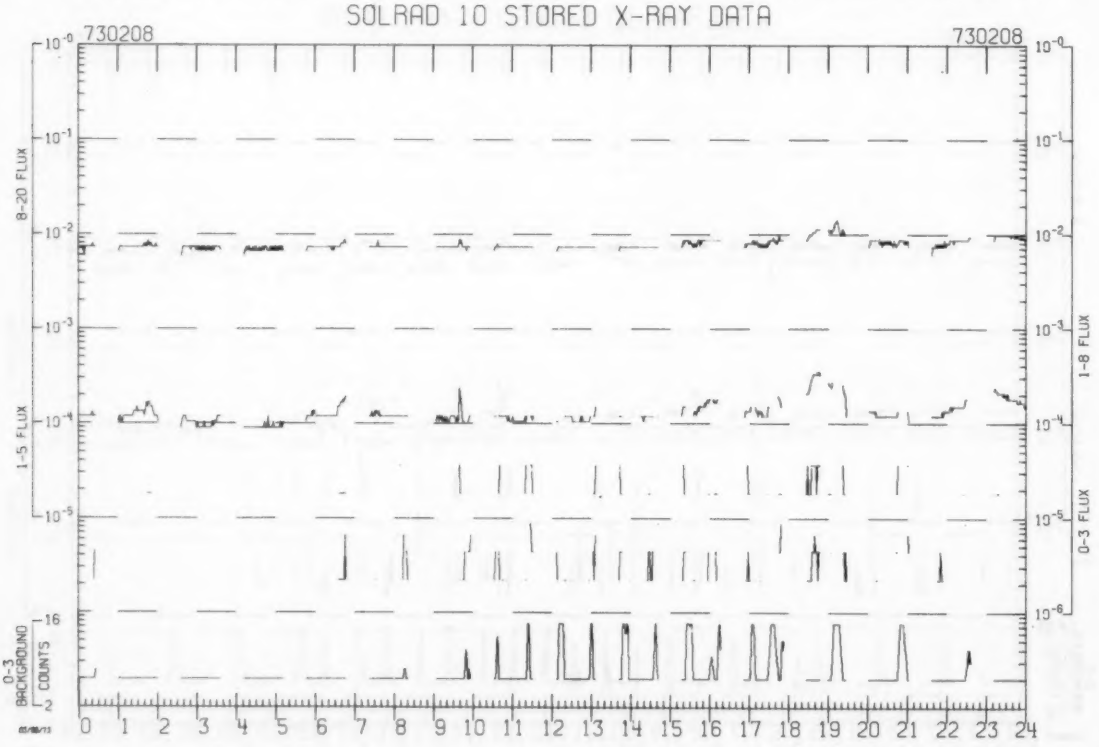
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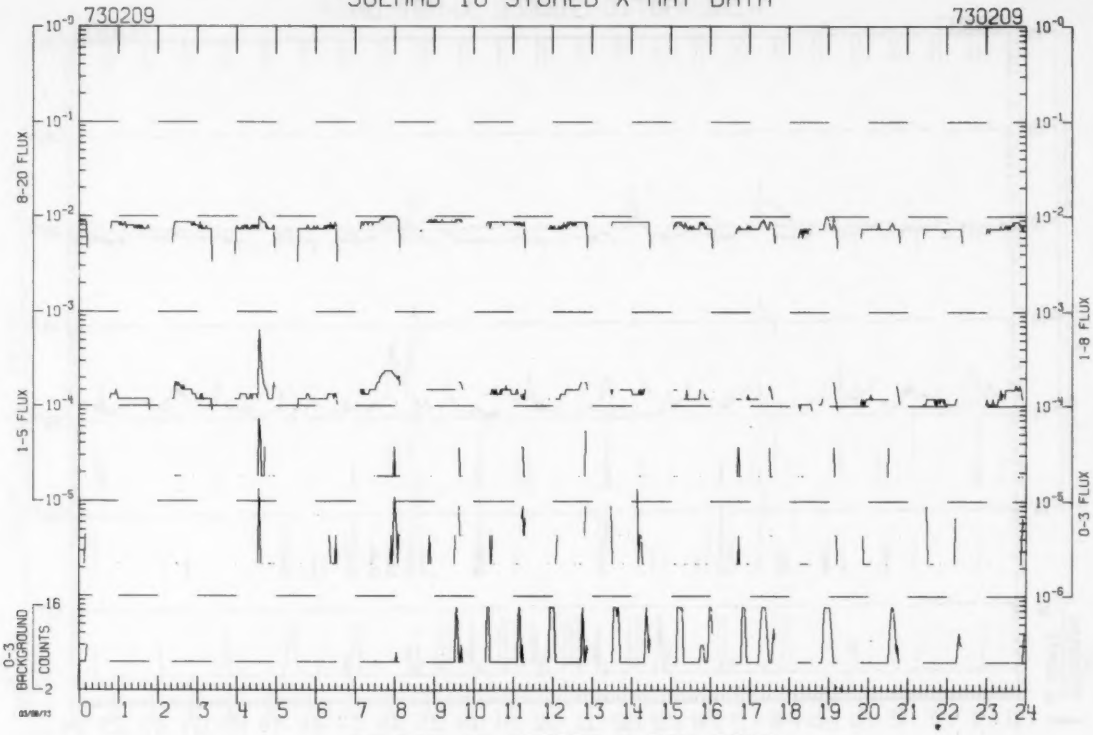

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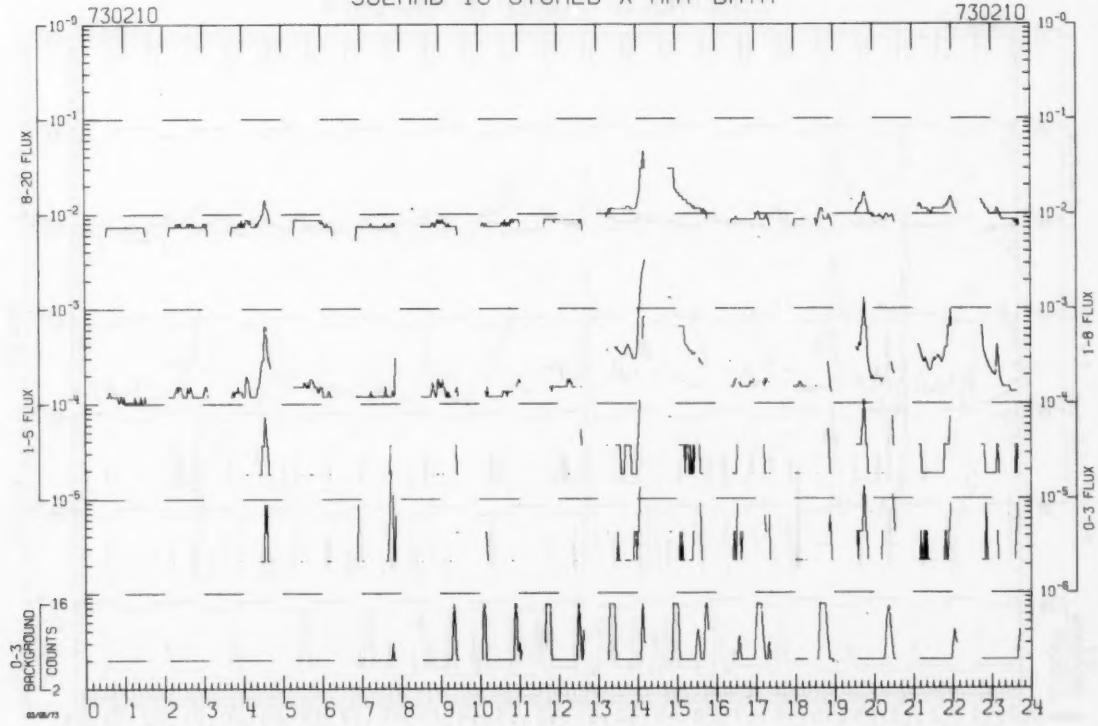

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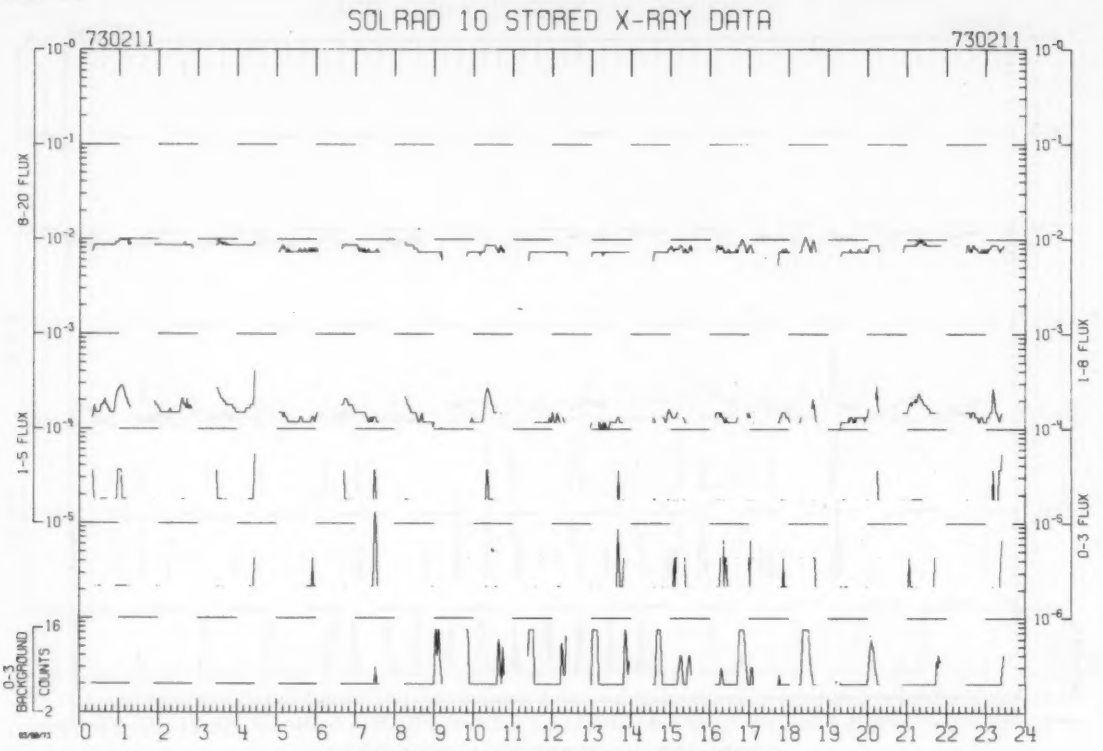
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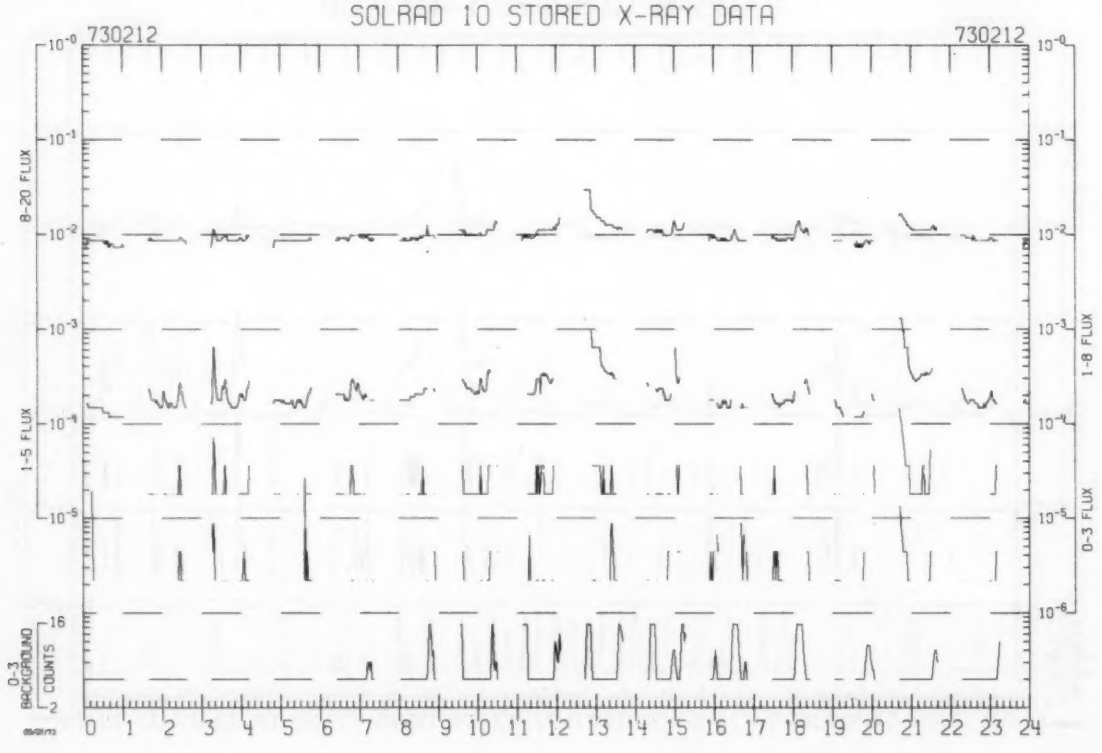
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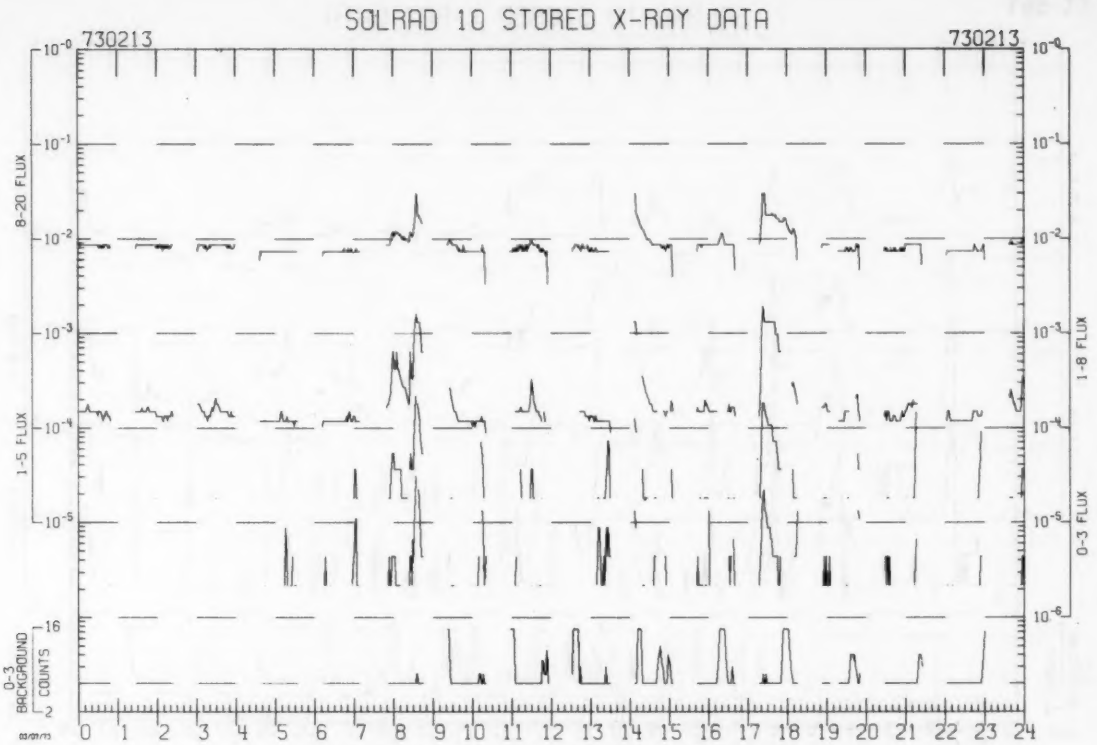
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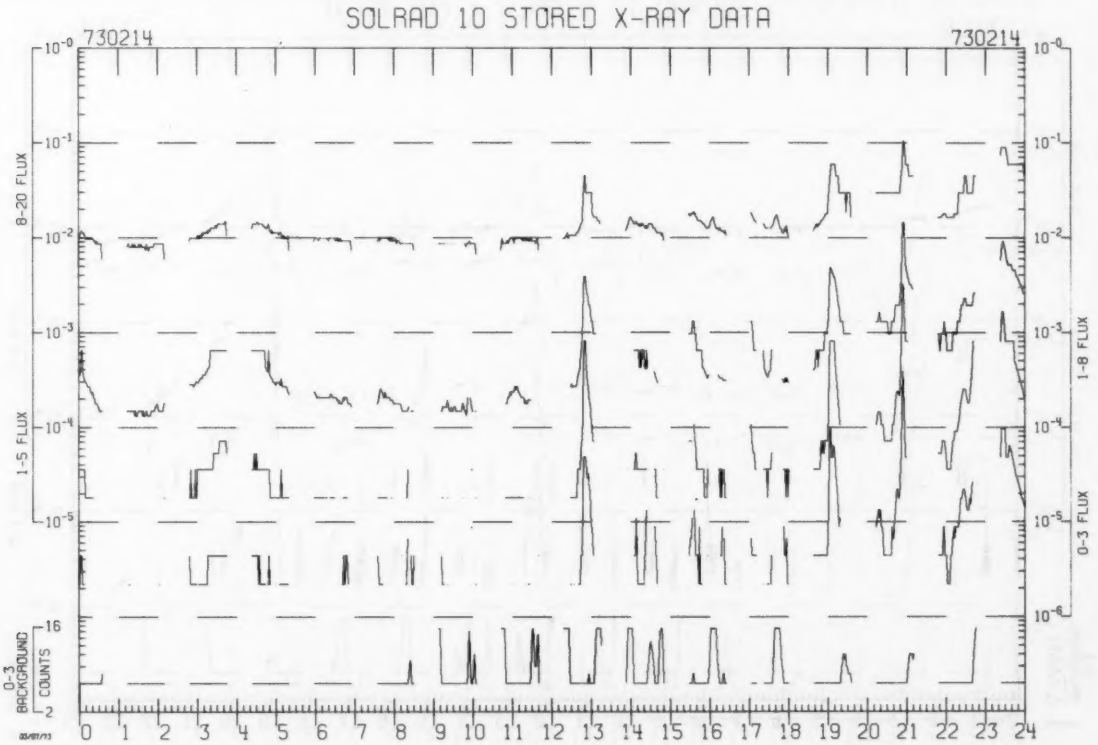
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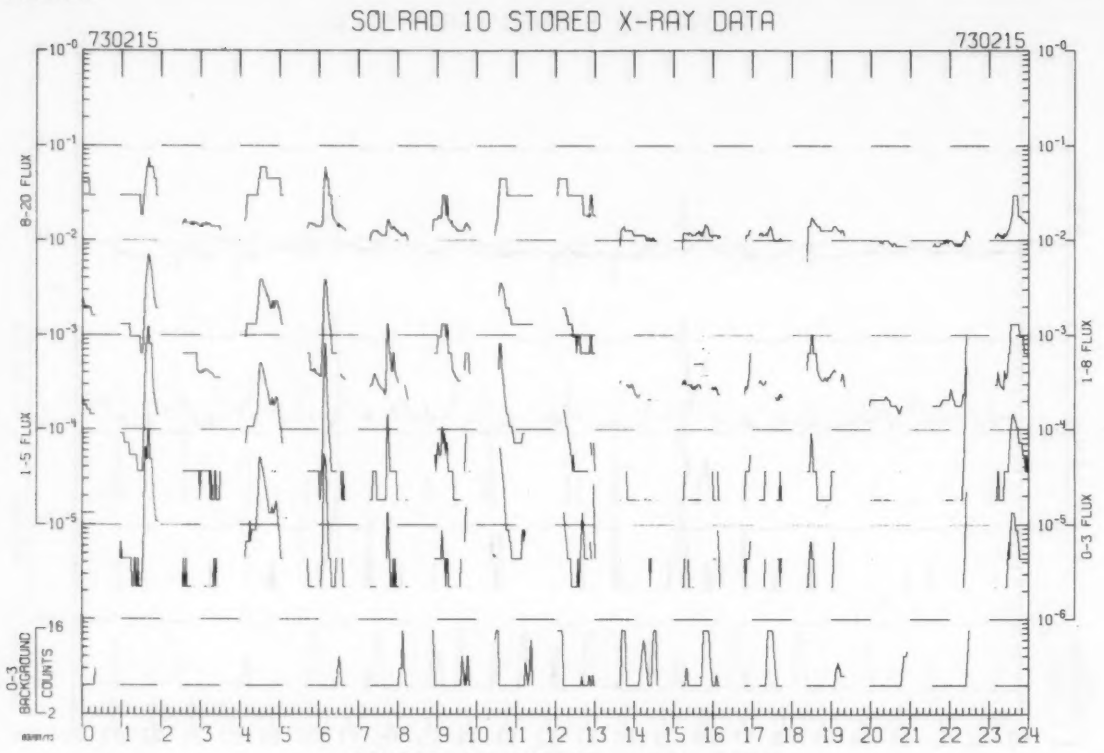
Feb 73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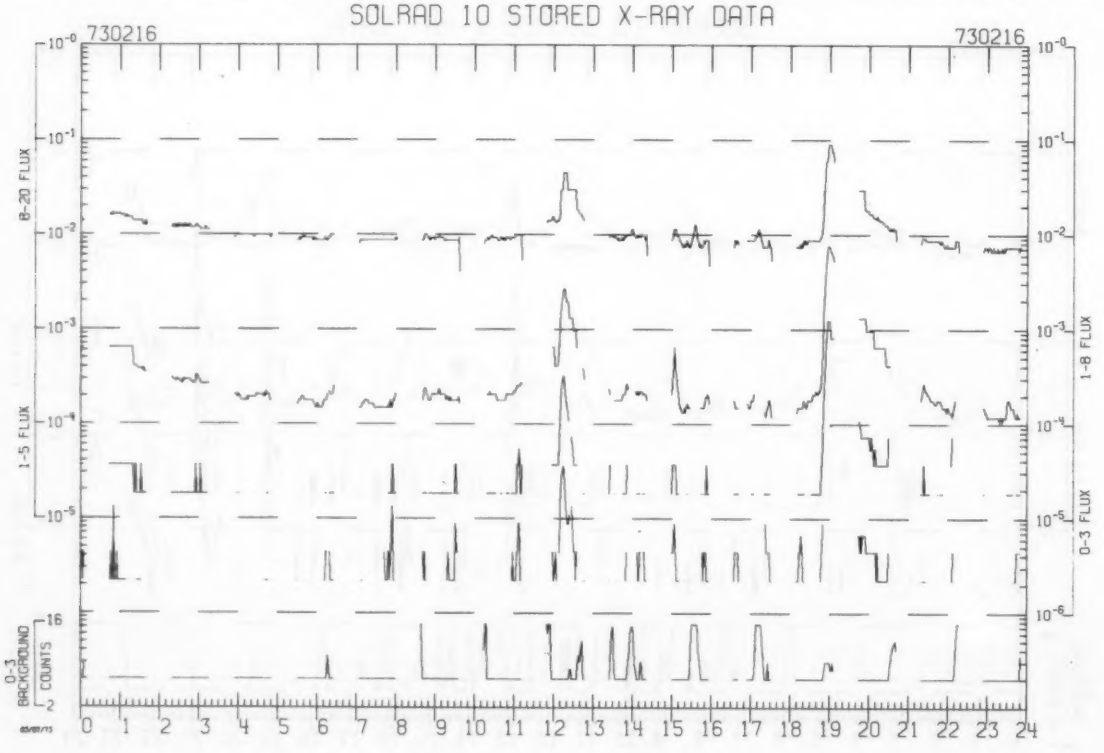
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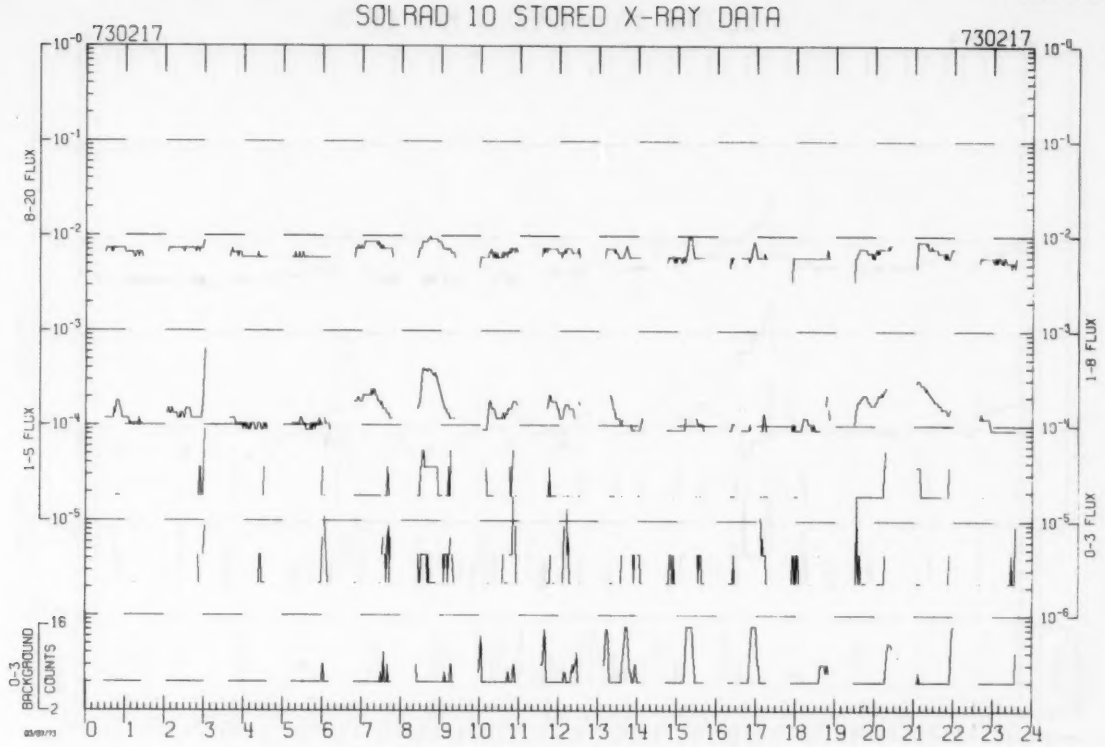

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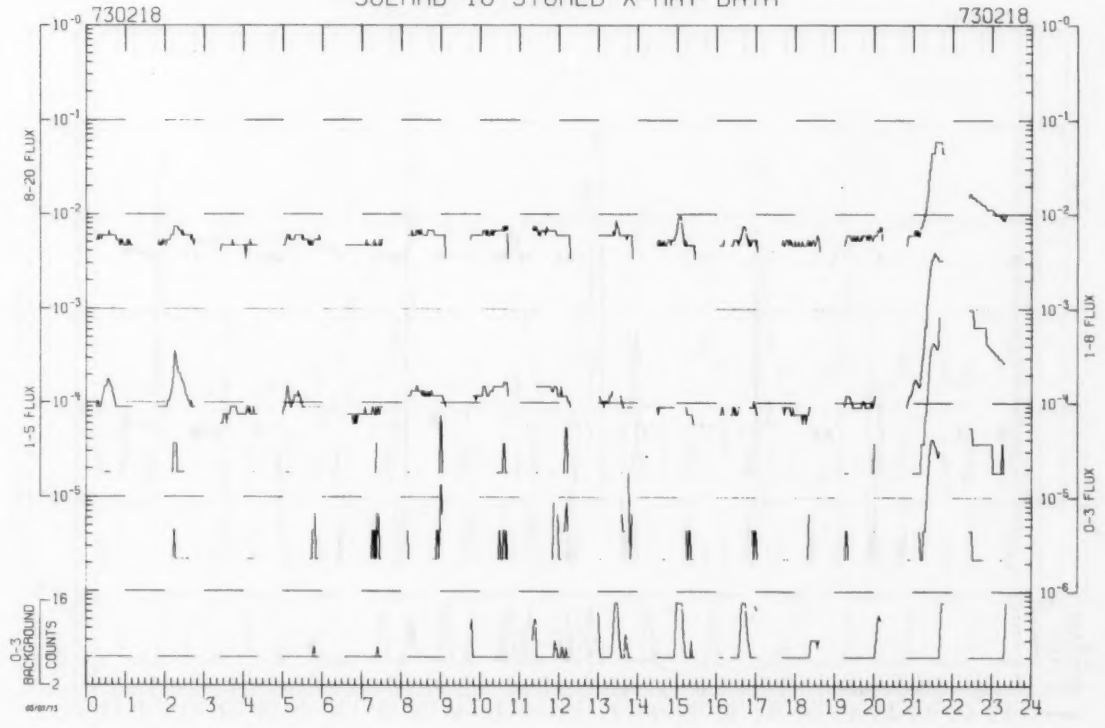

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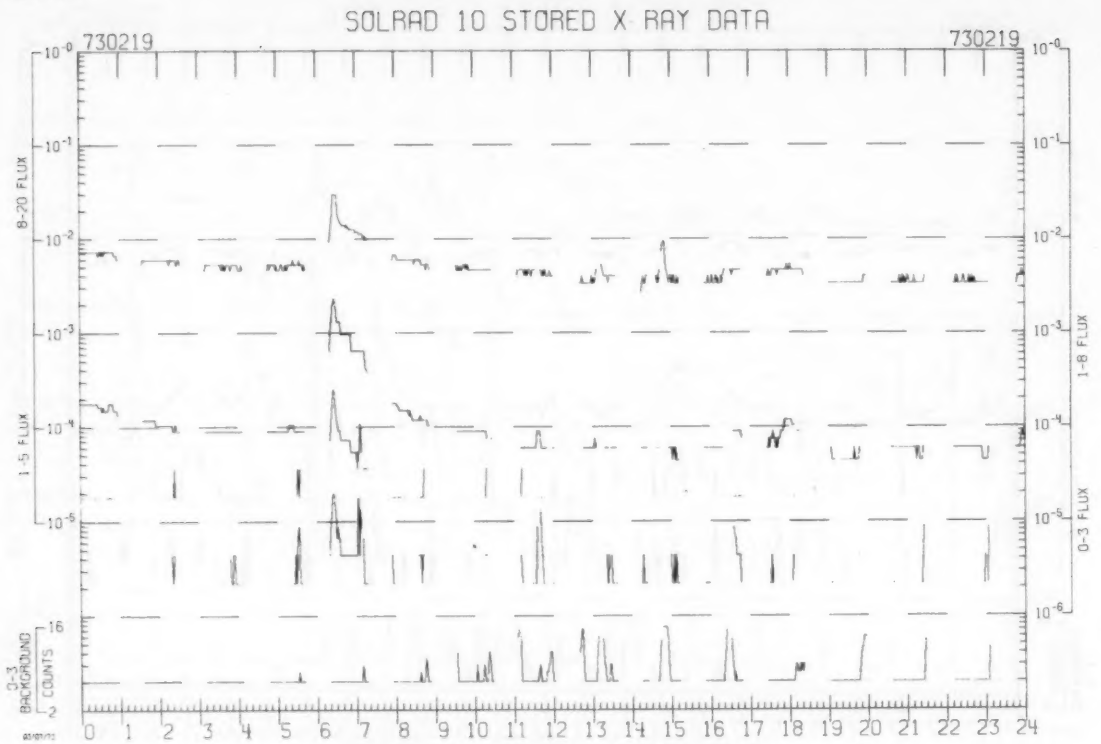
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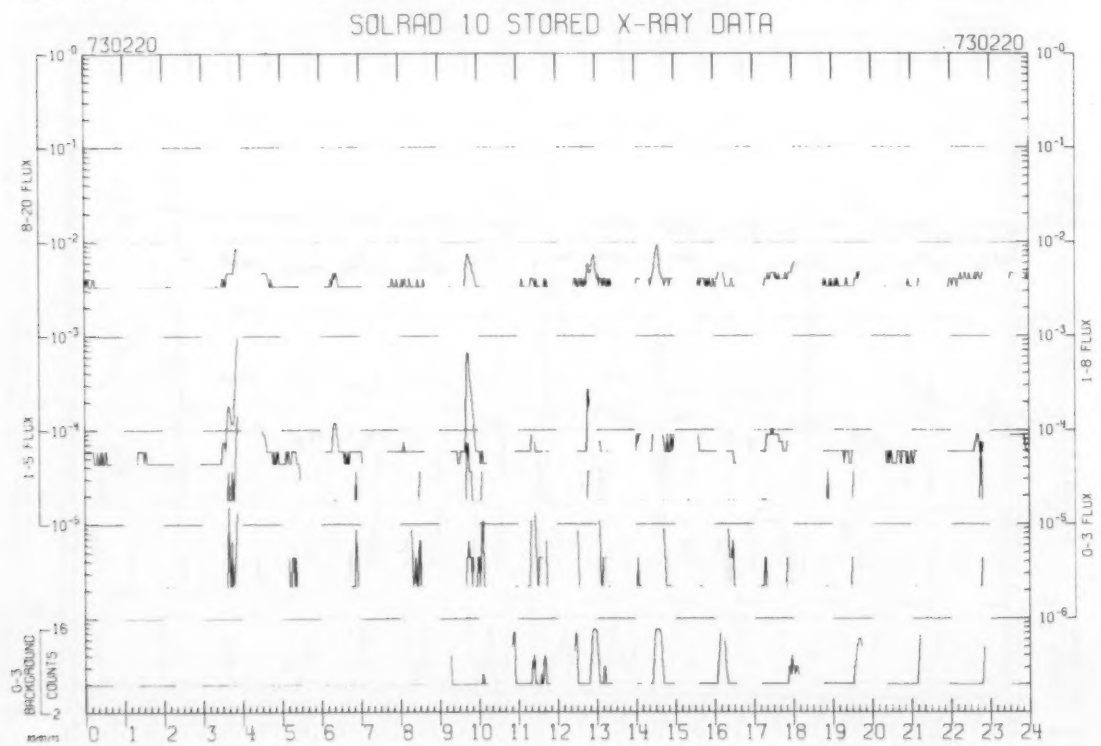
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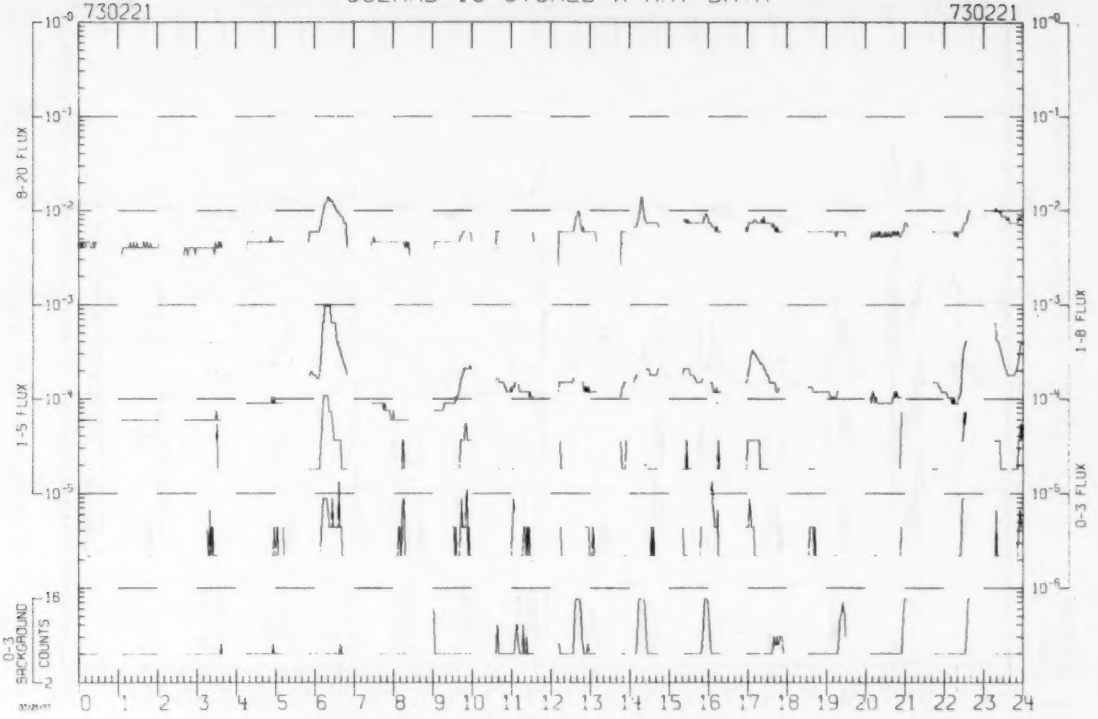

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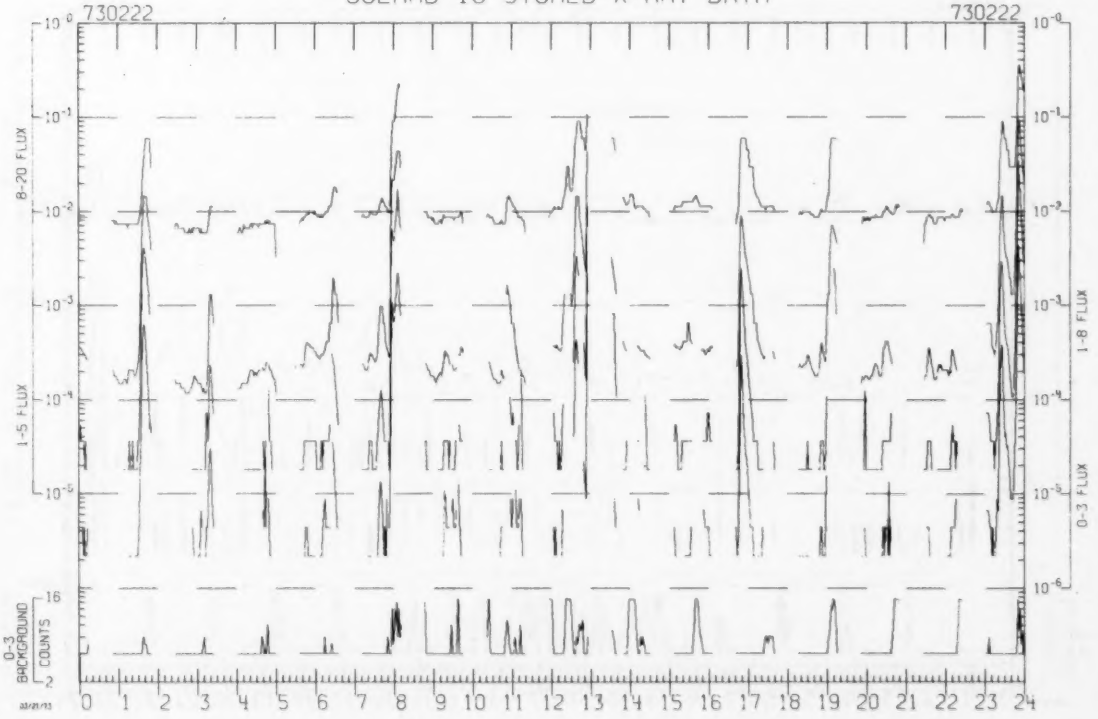

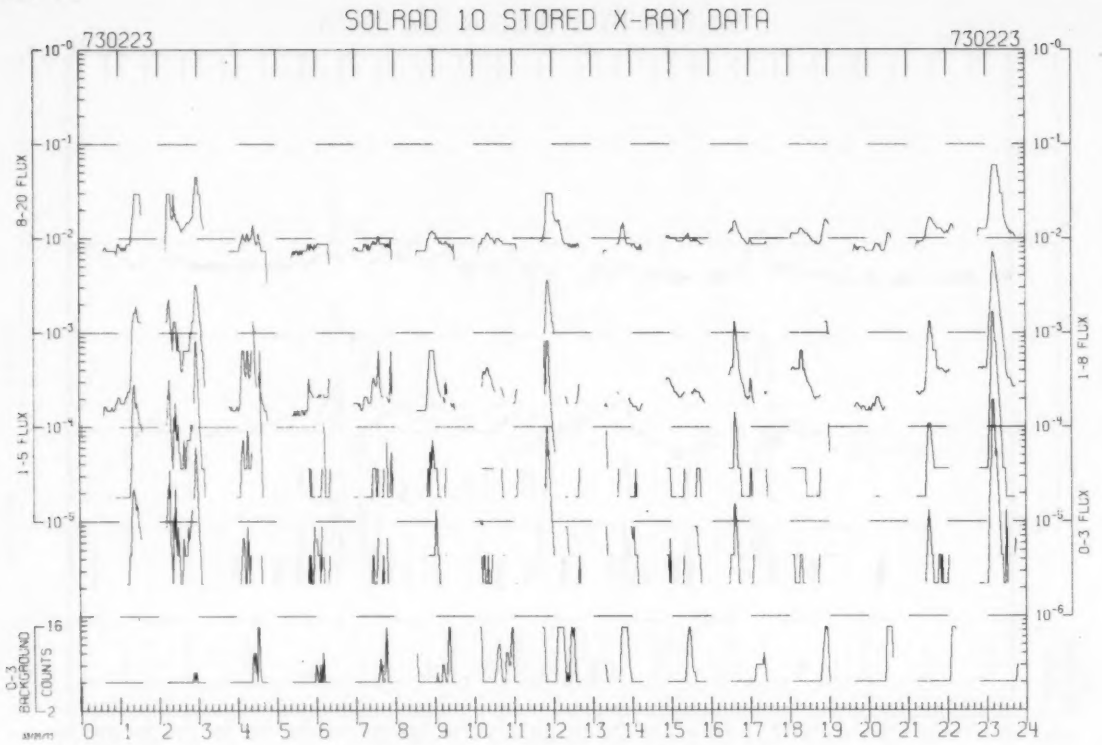
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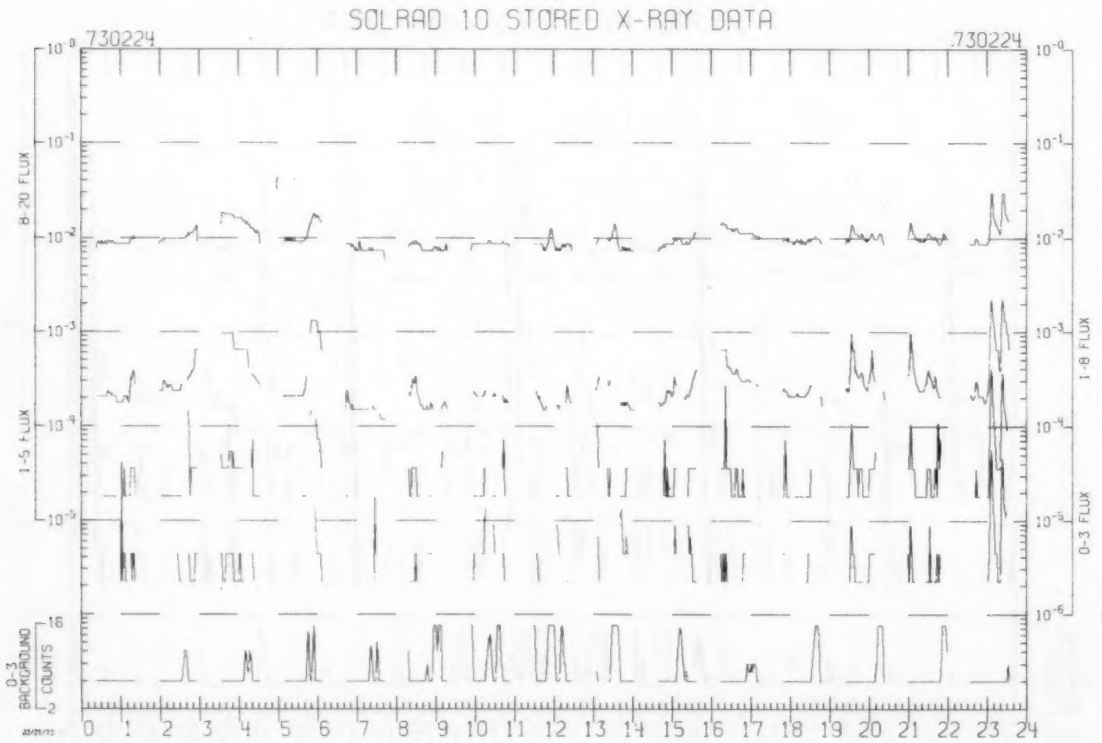
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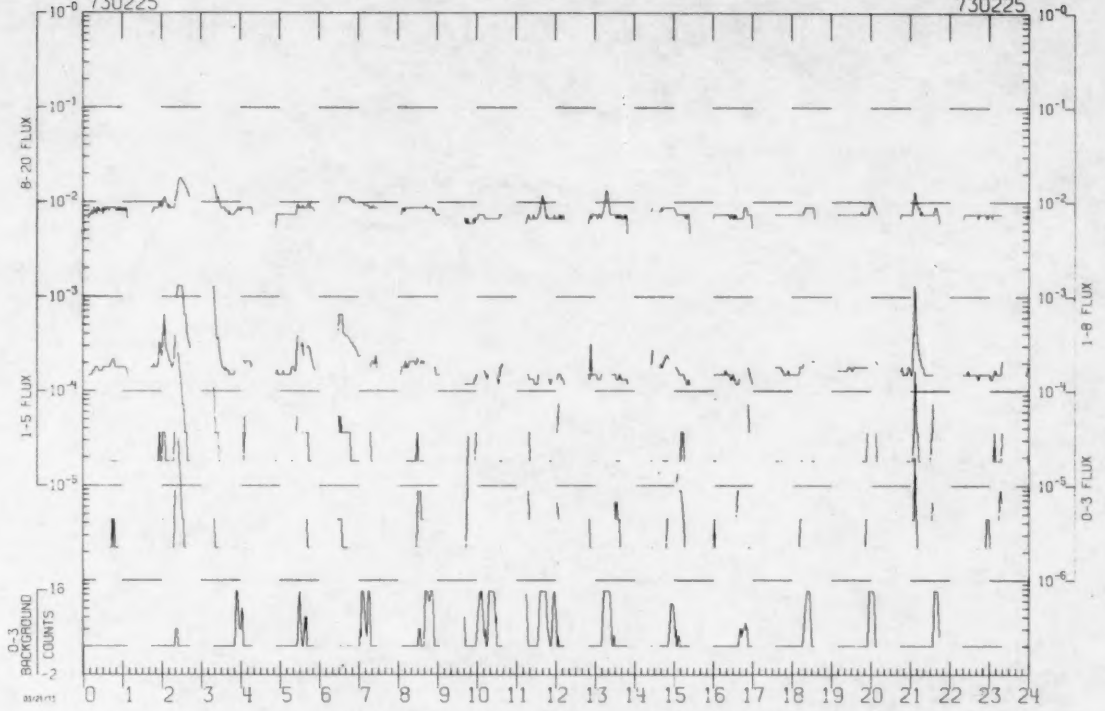

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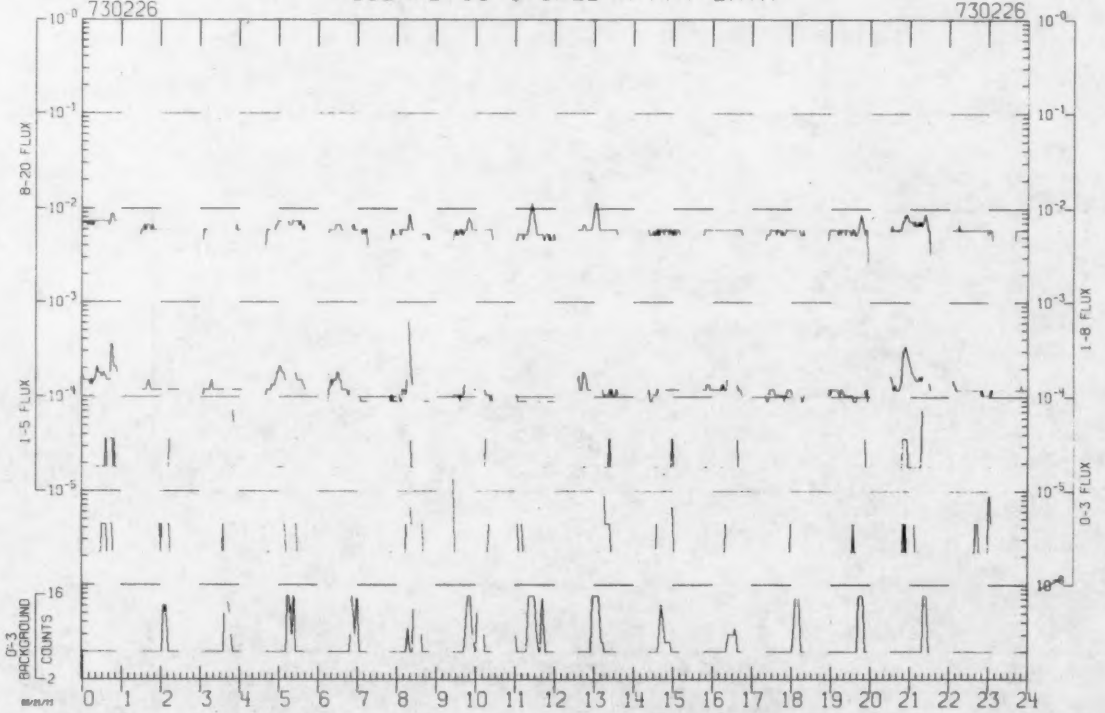

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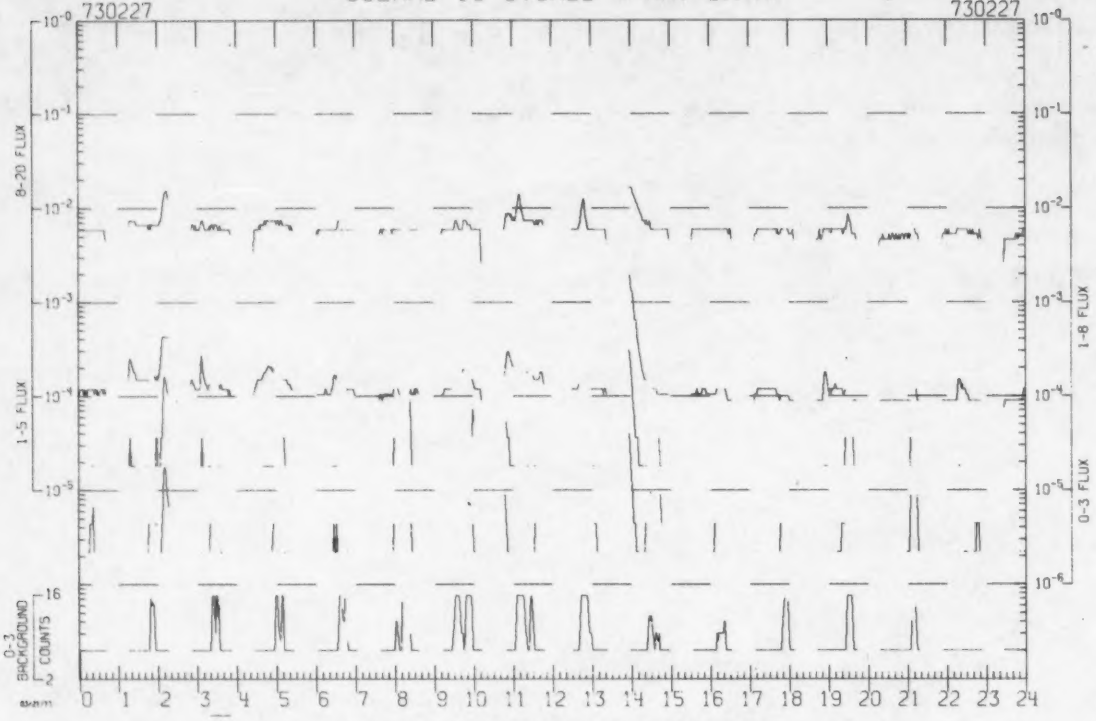

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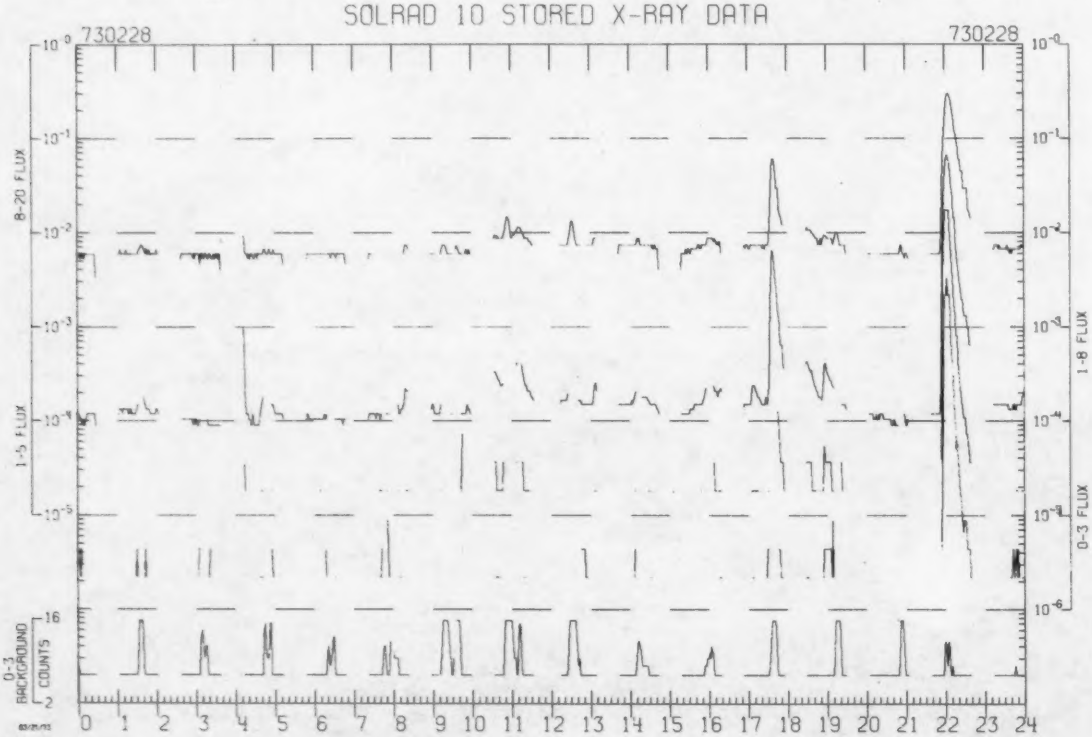
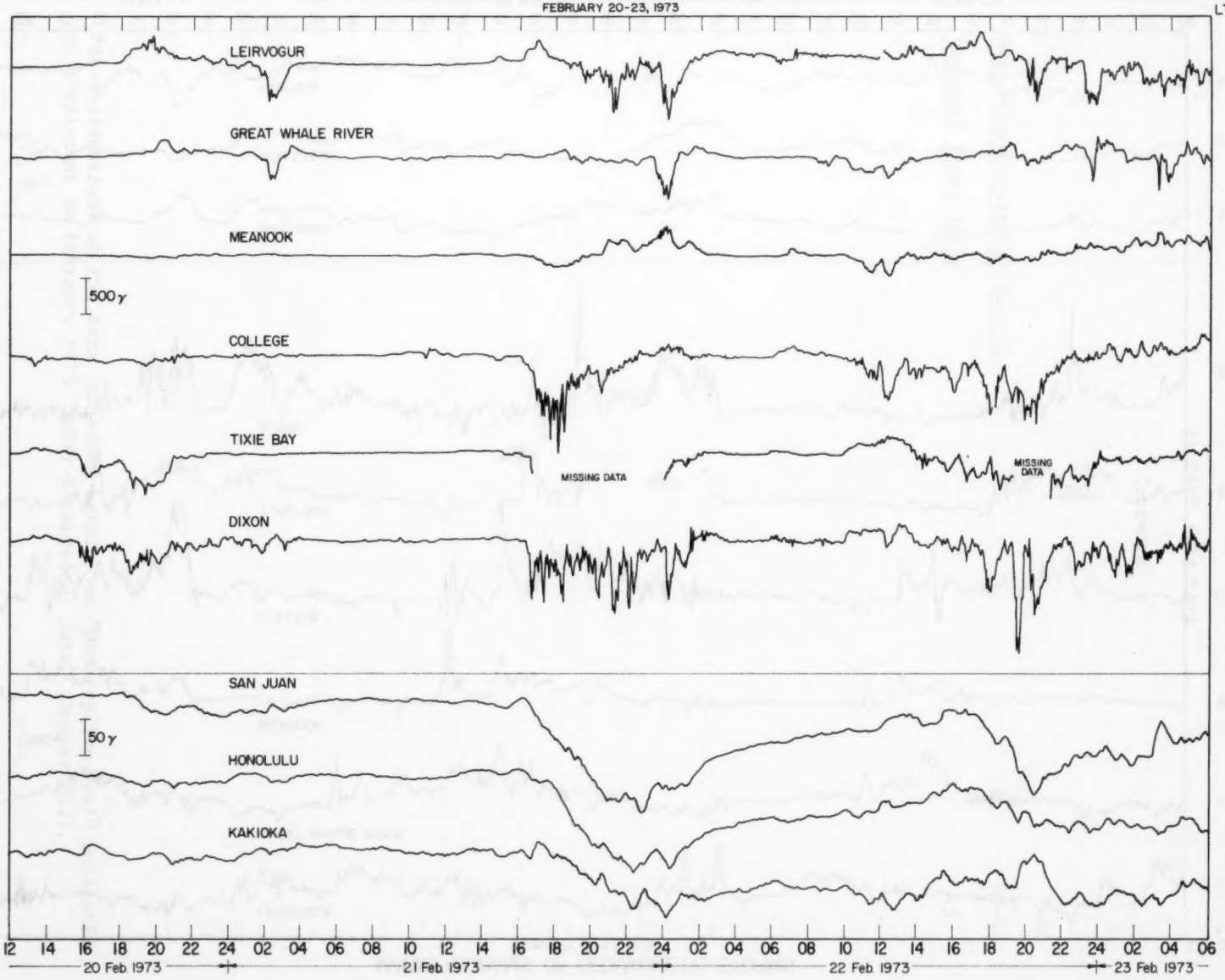


MAGNETOGRAMS OF GEOMAGNETIC STORMS

MAGNETOGRAMS OF GEOMAGNETIC STORMS

FEBRUARY 20-23, 1973



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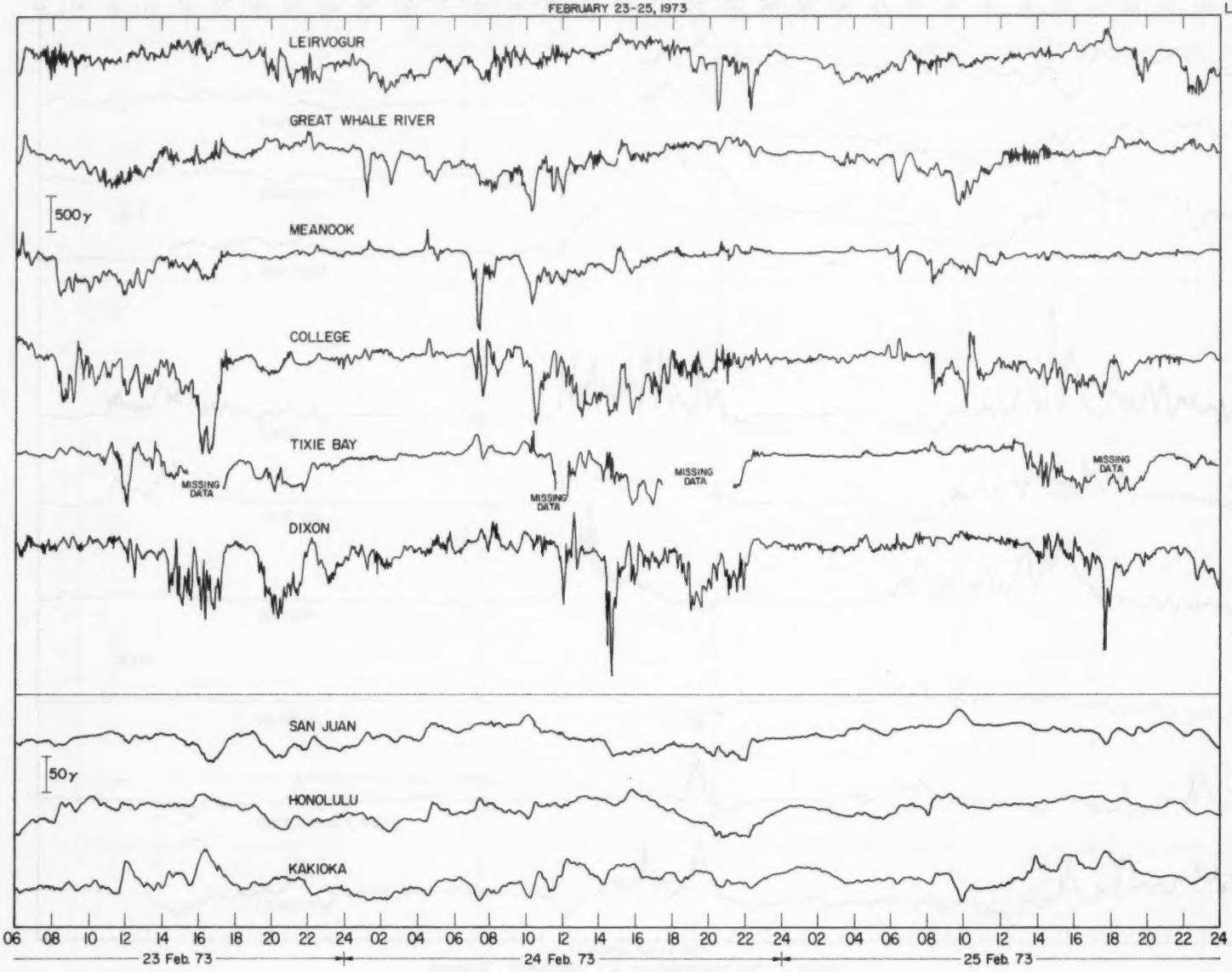
MAGNETOGRAMS OF GEOMAGNETIC STORMS

FEBRUARY 23-25, 1973



SGD 348 Part II (Comprehensive)

JANUARY 1973 DATA

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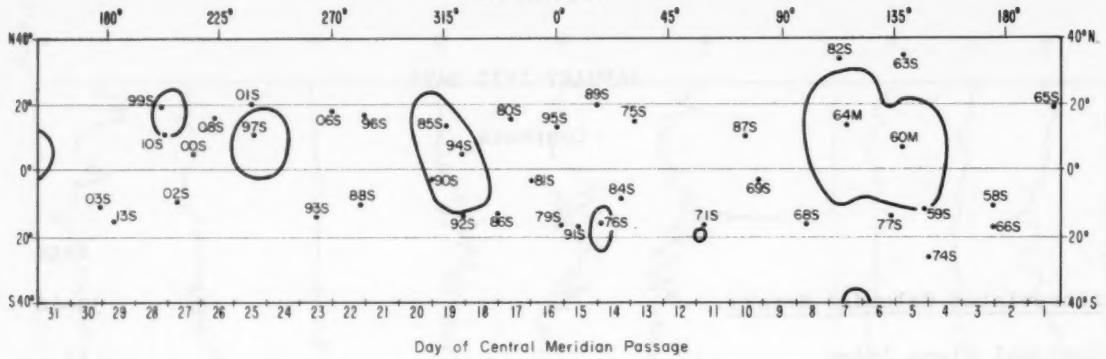
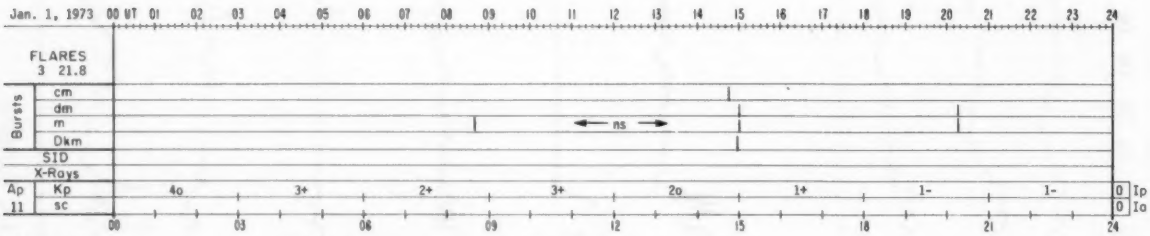
For explanations of the data contained herein see "Descriptive Text" published as supplement to February 1973 "Solar-Geophysical Data" (Number 342).

23 Feb 73

ABBREVIATED CALENDAR RECORD

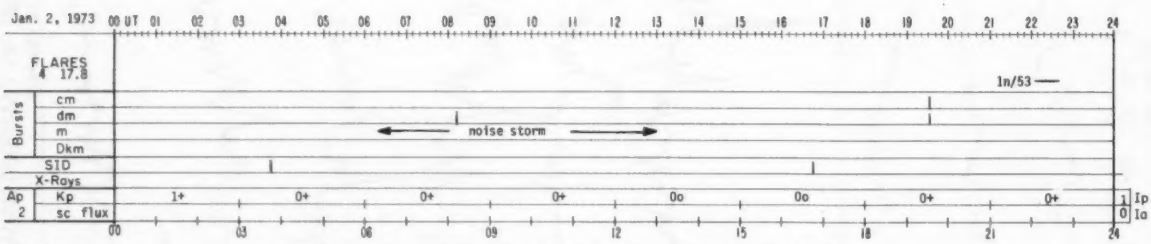
JANUARY 1973





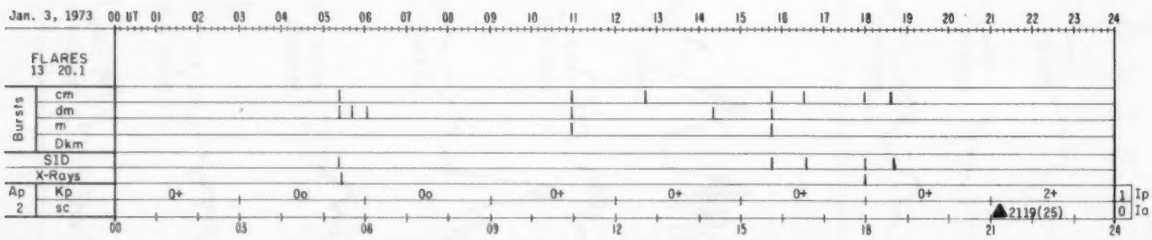
97 10 cm flux
45 Rz
CMP (12165) N19 (19081) N19 (βf)2

Moderately br. green corona 7 days later on NW limb.



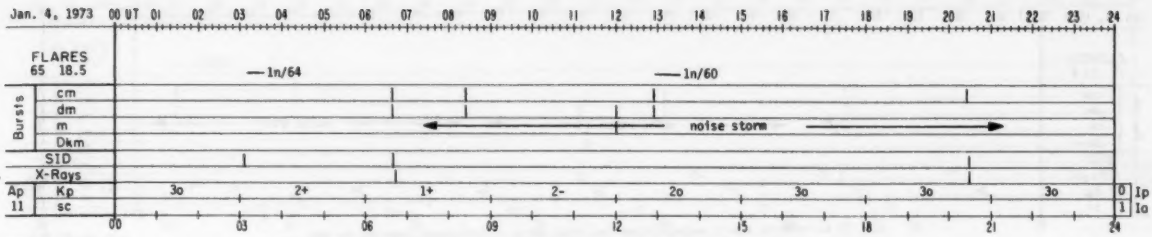
102 10 cm flux
53 Rz

One of five most magnetically quiet days with activity extremely quiet after 0300;
moderately br. green corona 7 days later on SW limb.



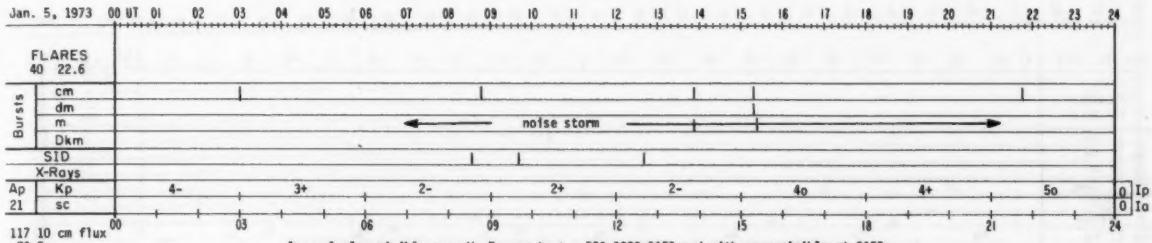
109 10 cm flux
55 Rz
CMP 12158 S11 (19083) S11 (βp)3
12166 S16 19079 S17 (βf)2

One of five most magnetically quiet days with activity extremely quiet to 2100.



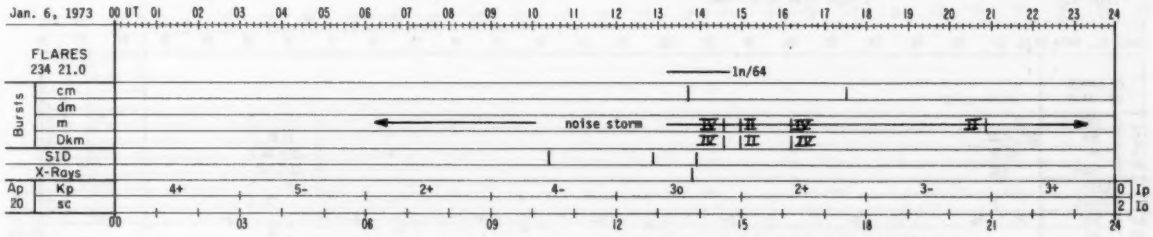
113 10 cm flux
60 Rz

Auroral glow visible over W. Europe at ϕ = 58° 1845-0150.



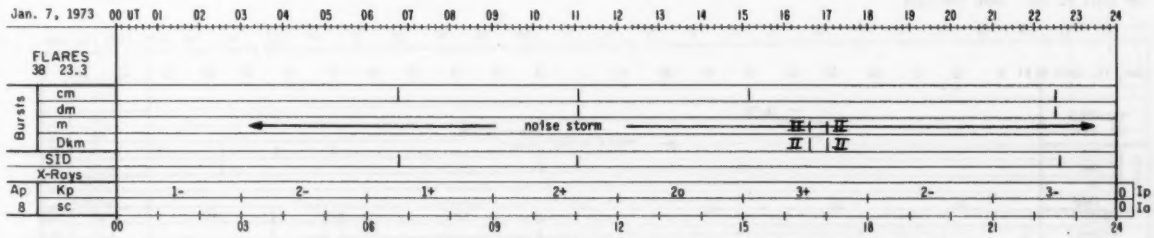
117 10 cm flux
72 Rz
CMP (12174) S26
12159 S12 19077 S11 (αp)2
12160 N07 19078 N08 (βp)5
(12163) N35

Auroral glow visible over W. Europe to ϕ = 58° 0000-0150 and with rays visible at 0150; very br. green corona 7 days later on NW limb.



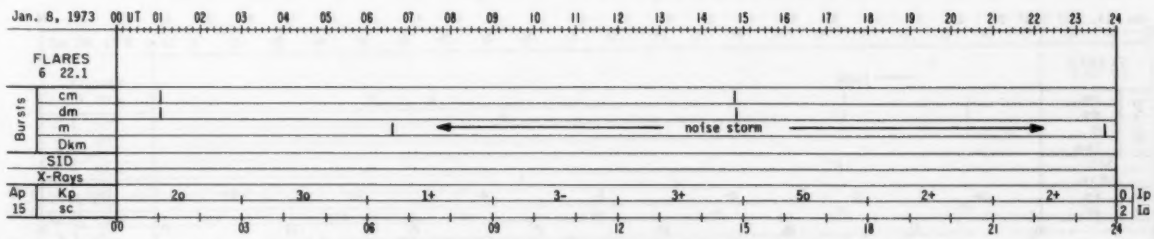
119 10 cm flux
83 Rz
CMP (12177) S13

No coronal data 7 days earlier on E. limb, moderately br. green corona 7 days later on NW limb.



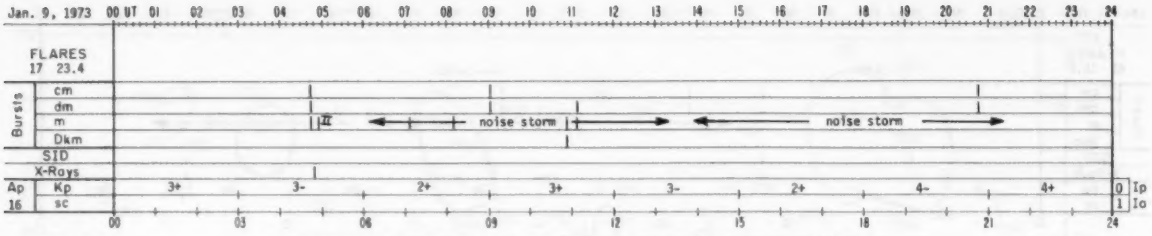
116 10 cm flux
66 Rz
CMP 12164 N14 (2) 19080 N13 (βf)4
(12182) N34

One of ten most magnetically quiet days; moderately br. green corona 7 days earlier on NE limb.



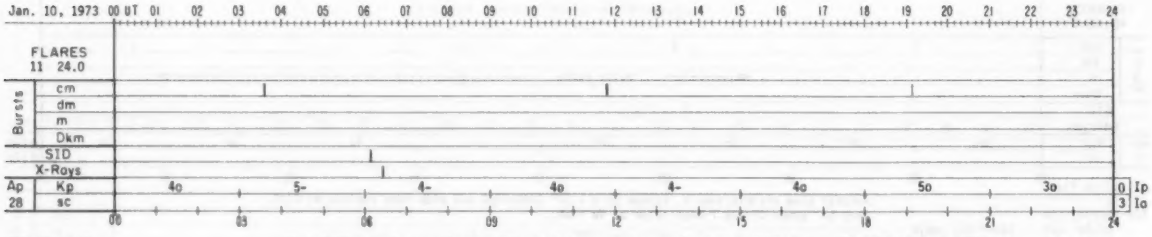
107 10 cm flux
60 Rz
CMP 12168 S17 (2)

No coronal data 7 days earlier on E. limb, nor 7 days later on W. limb.



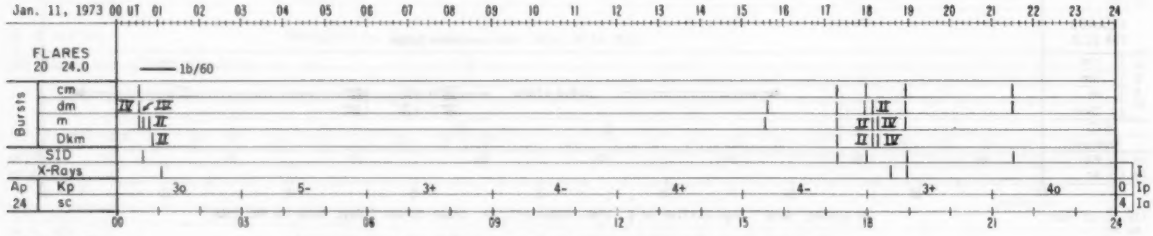
107 10 cm flux
70 Rz

Aurora overhead over USSR at ϕ = 57° 1500-1600, aurora over W. Europe concealed by cloud, but reported by aircraft at ϕ = 59° 2400; no coronal data 7 days earlier on E. limb, moderately br. green corona 7 days later on NW limb.



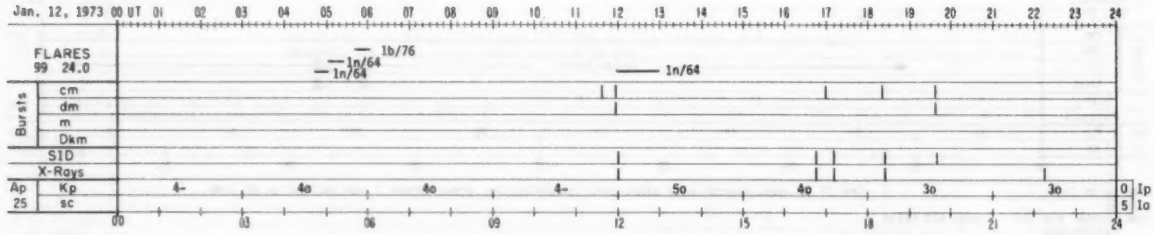
107 10 cm flux
55 Rz
CMP 12169 S03
12187 N10

One of five most magnetically disturbed days; aurora overhead over USSR at ϕ = 59° 1000-1200, ϕ = 57° 1300-1400 and 1500, and ϕ = 58° 1500-2100, aurora over W. Europe concealed by cloud, but reported by aircraft at ϕ = 59° 0000; moderately br. green corona 7 days earlier on SE limb, no coronal data 7 days later on W. limb.



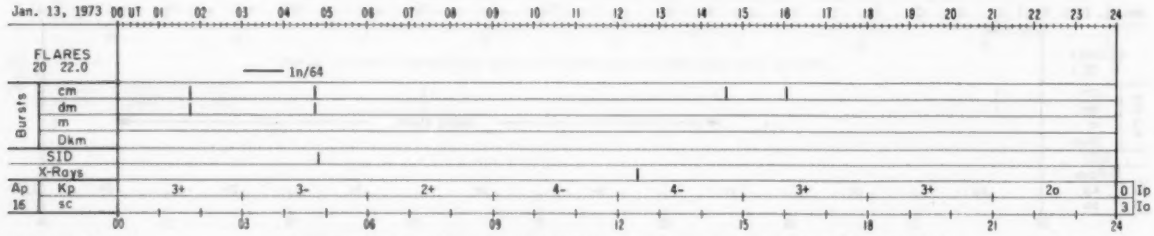
106 10 cm flux
52 Rz
CMP 12171 S17 (2) 19082 S18 (ap)2

Aurora overhead over USSR at ϕ = 57° 1200-1300 and 1500-1600 and ϕ = 59° 1700; moderately br. green corona 7 days earlier on SE limb and 7 days later on SW limb.



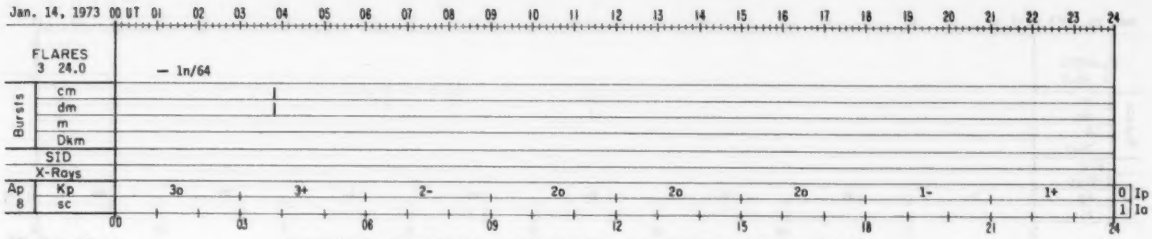
107 10 cm flux
32 Rz

One of five most magnetically disturbed days; aurora overhead over USSR at ϕ = 57° 1400-1500; very br. green corona 7 days earlier on SE limb, moderately br. green corona 7 days later on SW limb.



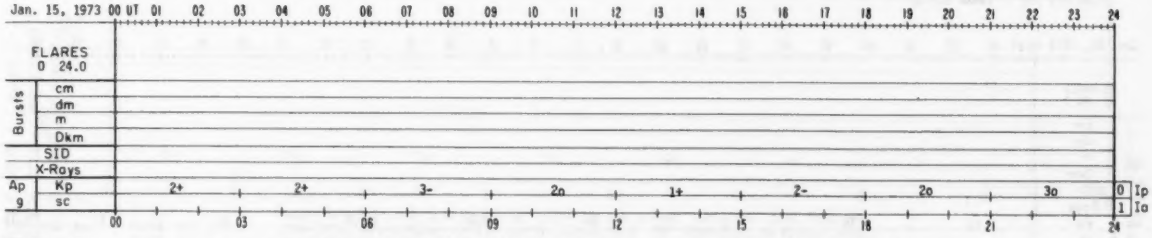
104 10 cm flux
35 Rz
CMP (12183) N61
12175 N15 19084 N13 (ap)2

Aurora overhead over USSR at ϕ = 58° 1500-1800; very br. green corona 7 days earlier on SE limb, br. green corona 7 days later on SW limb.



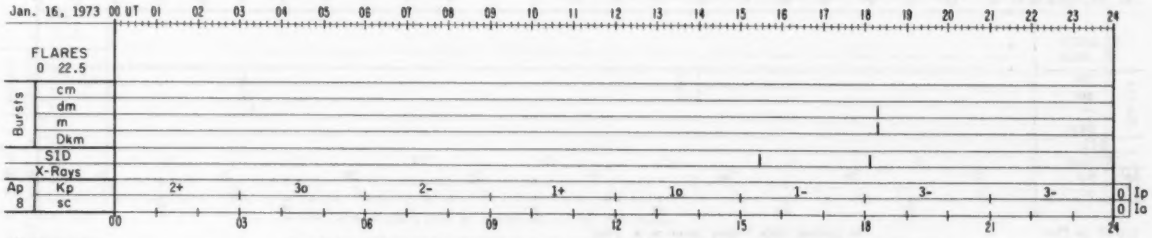
100 10 cm flux
15 Rz
CMP (12184) S08
12176 S16 19085 S14 (αp)2

One of ten most magnetically quiet days; br. green corona 7 days earlier on SE limb and 7 days later on SW limb, moderately br. green corona 7 days earlier on NE limb.



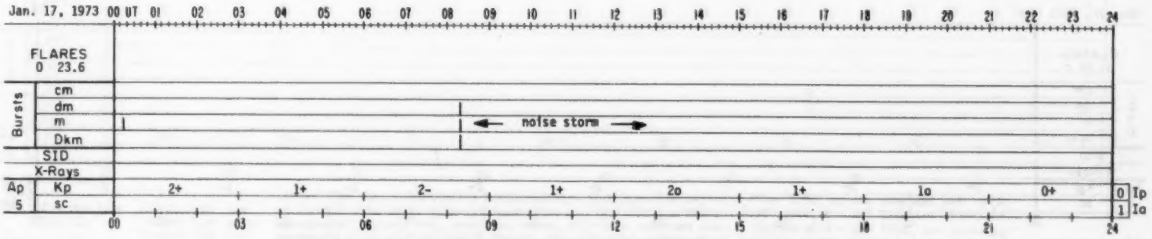
98 10 cm flux
10 Rz
CMP (12189) N20
(12191) S17 19087 S18 (βp)3

One of ten most magnetically quiet days; very br. green corona 7 days earlier on SE limb and moderately br. green corona 7 days earlier on NE limb.



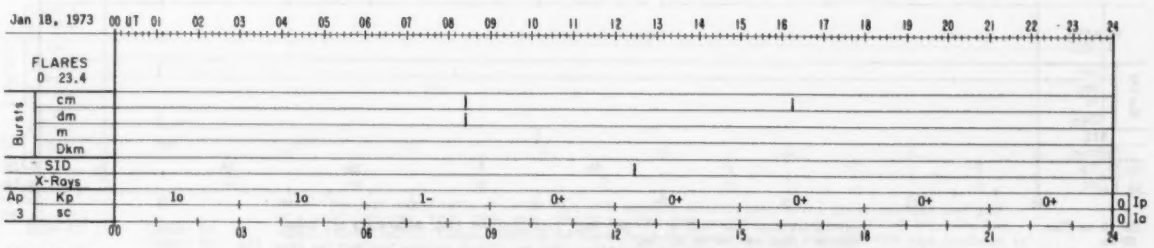
97 10 cm flux
11 Rz
CMP (12179) S17
(12195) N13

One of ten most magnetically quiet days; moderately br. green corona 7 days earlier on SE limb.



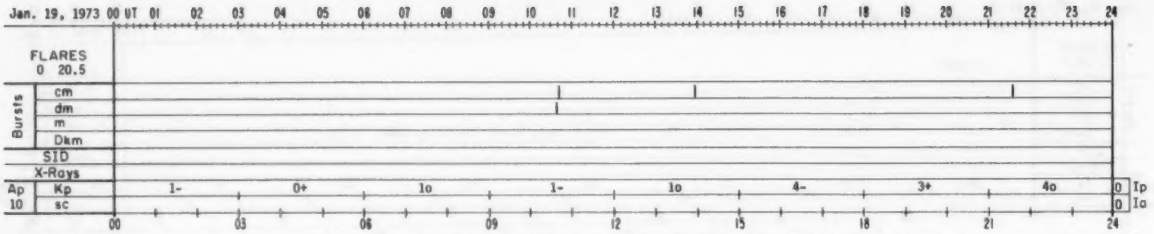
97 10 cm flux
27 Rz
CMP (12181) S04
12180 N16 (3)

One of five most magnetically quiet days; moderately br. green corona 7 days earlier on SE limb and 7 days later on SW limb.



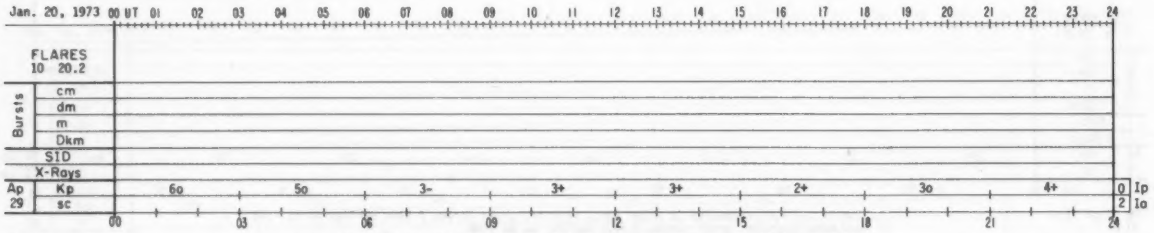
98 10 cm flux
42 Rz
CMP 12186 S13 (2)

One of five most magnetically quiet days, extremely quiet after 0900; moderately br. green corona 7 days later on NW and SW limb.



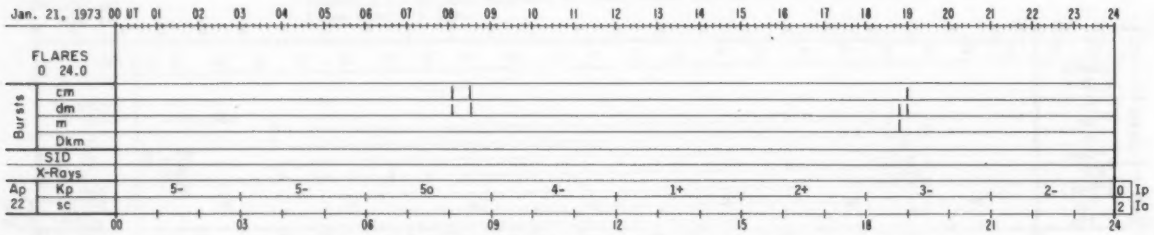
98 10 cm flux
47 Rz
CMP 12192 S13 19088 S13 βp CMP Jan. 18
12194 N04 N03 (No obs. Mt. Wilson)
12185 N13 (2) 19086 N12 αp

Aurora overhead over USSR at ϕ = 60° 1800-1900; cosmic ray decrease of about 5% begins late in day, reaches a maximum on Jan. 20 and returns to normal Jan. 30; br. green corona 7 days earlier on NE and SE limb, moderately br. green corona 7 days later on NW and SW limb.



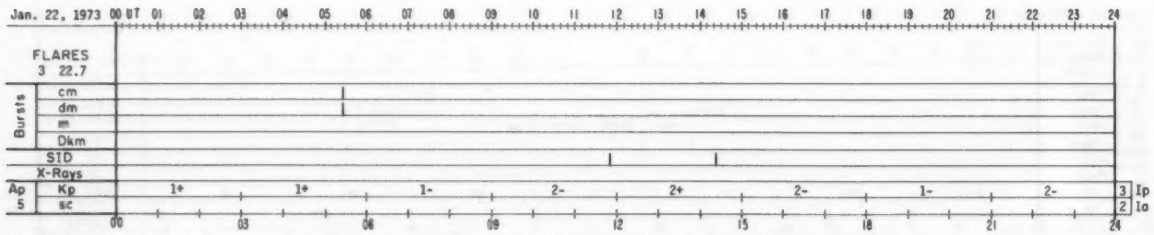
102 10 cm flux
60 Rz
CMP (12190) S03

One of five most magnetically disturbed days, with moderate storm activity 0000-0600; moderately br. green corona 7 days earlier on SE limb, no coronal data 7 days later on W. limb.



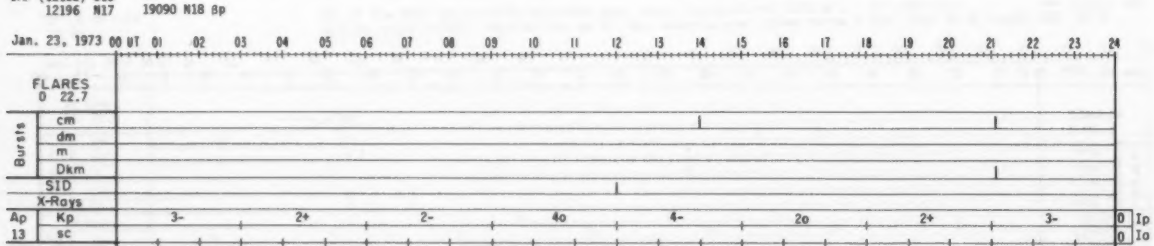
101 10 cm flux
62 Rz

No coronal data 7 days later on W. limb.



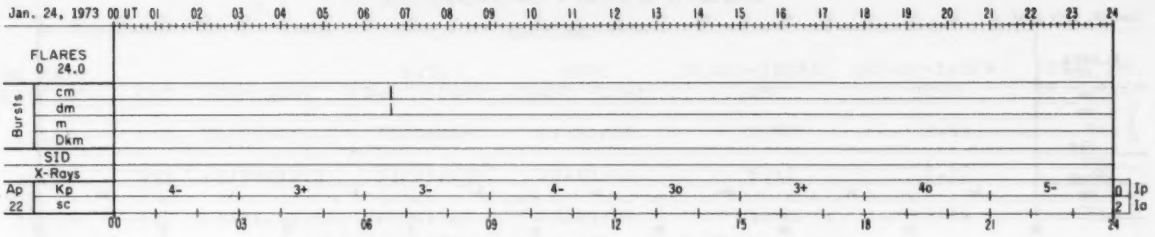
102 10 cm flux
62 Rz
CMP (12188) S10
12196 N17 19090 N18 βp

One of five most magnetically quiet days; no coronal data 7 days earlier on E. limb.



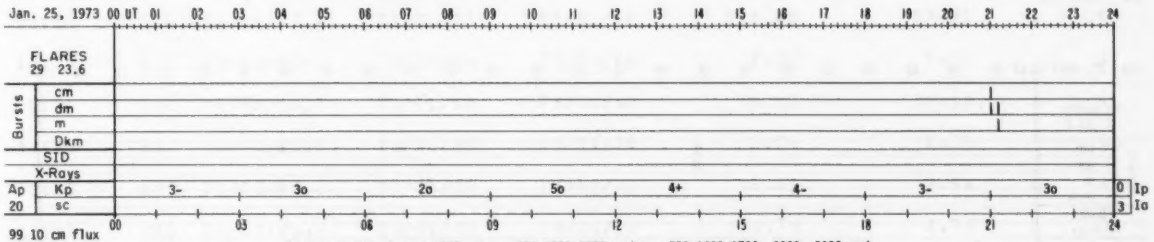
100 10 cm flux
60 Rz
CMP (12206) N18
12193 S14 (3) 19091 S14 βf
19095 S10 (βp)3

Aurora overhead over USSR at ϕ = 59° 2000, 2100-2200 and 2300; moderately br. green corona 7 days earlier on SE limb.



100 10 cm flux
50 Rz

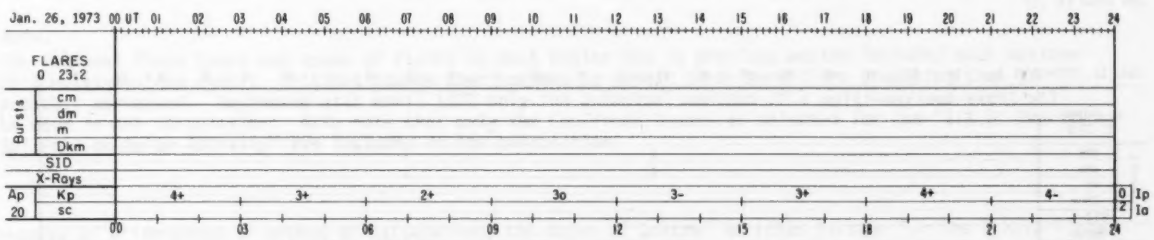
Aurora overhead over USSR at ϕ = 59° 1500-1700 and ϕ = 57° 1700-1900; no coronal data 7 days earlier on E. limb.



99 10 cm flux
39 Rz
CMP 12197 N11
12201 N20

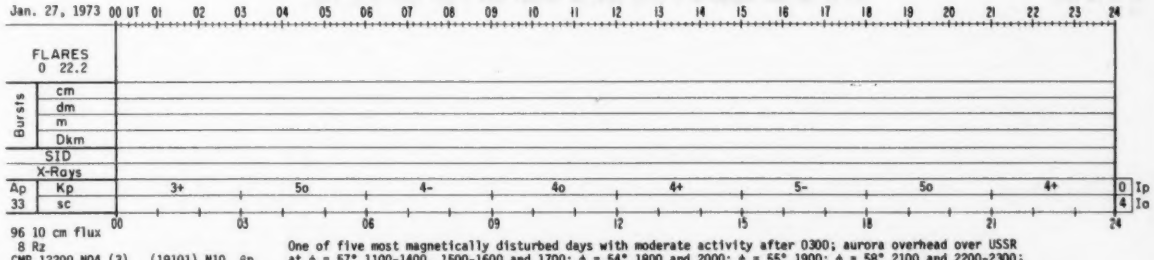
19089 N11 (β)3
19092 N11 αp
(19096) N19

Aurora overhead over USSR at ϕ = 59° 1200-1300 and ϕ = 58° 1600-1700, 2000, 2100 and 2200-2300, auroral glow visible over W. Europe to ϕ = 59° 2350-0100; no coronal data 7 days later on W. limb.



98 10 cm flux
27 Rz
CMP (12208) N16

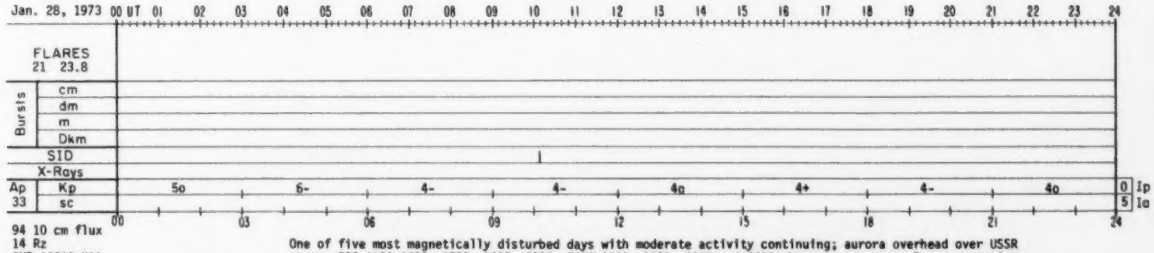
Auroral glow visible over W. Europe at ϕ = 59° 0000-0100.



96 10 cm flux
8 Rz
CMP 12200 N04 (3)
12202 S09

(19101) N10 βp
(19094) S10 (αp)4
(19098) S10 (α)2

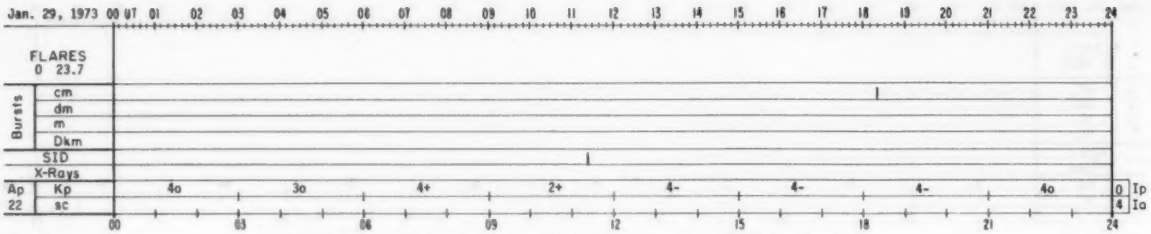
One of five most magnetically disturbed days with moderate activity after 0300; aurora overhead over USSR at ϕ = 57° 1100-1400, 1500-1600 and 1700; ϕ = 54° 1800 and 2000; ϕ = 55° 1900; ϕ = 58° 2100 and 2200-2300; homogeneous auroral arc, sometimes rayed, with base overhead over W. Europe at ϕ = 62° 1950, and receding northward to ϕ = 67° 0025-0030 January 28, with rays prominent at 1947; br. green corona 7 days earlier on NE limb.



94 10 cm flux
14 Rz
CMP 12210 N11
12199 N19 (2)

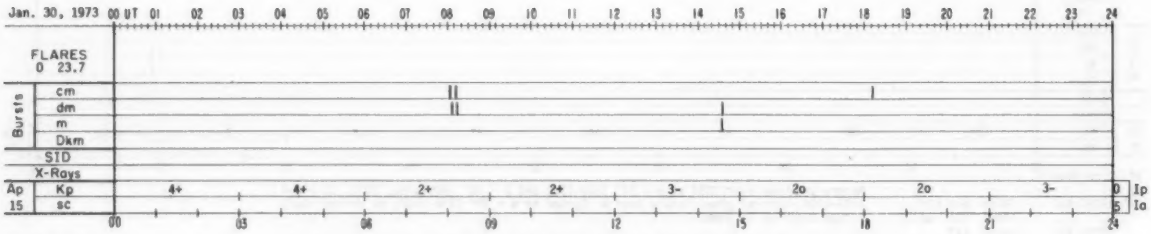
(19093) N21 αp
(19099) N17 (αp)1

One of five most magnetically disturbed days with moderate activity continuing; aurora overhead over USSR at ϕ = 58° 1100-1600, 1700, 1800, 1900, 2000-2100, 2200, 2300 and 2400; homogeneous auroral arc, sometimes rayed, visible over W. Europe, receding northward to be overhead at ϕ = 67° 0025-0030 with rays prominent at 0024 and 0040 and patches at 0015 and 0050; moderately br. green corona 7 days earlier on NE limb, br. green corona 7 days later on W. limb.



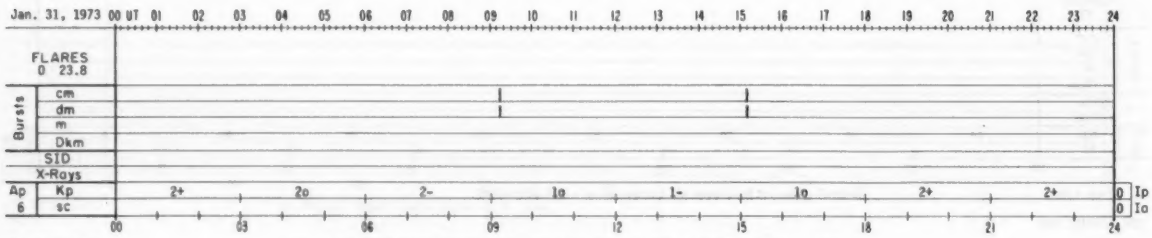
94 10 cm flux
7 Rz
CMP (12213) S16

Aurora overhead over USSR at ϕ = 58° 2000-2100 and 2200, auroral glow visible over W. Europe to ϕ = 60°.



92 10 cm flux
16 Rz
CMP 12203 S11 (2)

Aurora overhead over USSR at ϕ = 59° 1600 and ϕ = 58° 1700 and 1900-2100, auroral glow visible over W. Europe to ϕ = 60°; no coronal data 7 days later on W. limb.



90 10 cm flux
13 Rz

One of ten most magnetically quiet days; no coronal data 7 days later on W. limb.

REGIONAL FLARE INDEX

JANUARY 1973

MC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
12155	N19	73/01/01.1	73/01/06	73/01/06	3.58	3.58	1
12158	S11	73/01/03.0	73/01/09	73/01/09	5.17	5.17	1
12159	S12	73/01/05.1	73/01/05	73/01/05	15.54	15.54	1
12160	N 7	73/01/05.7	72/12/30	73/01/11	110.26	8.48	12
12164	N14	73/01/07.4	73/01/03	73/01/14	398.46	33.20	26
12169	S 3	73/01/10.1	73/01/06	73/01/06	7.81	7.81	1
12176	S15	73/01/13.0	73/01/12	73/01/12	35.13	35.13	1
12191	S17	73/01/15.6	73/01/20	73/01/20	2.76	2.76	1
12185	N13	73/01/19.8	73/01/12	73/01/20	8.45	0.94	2
12197	N10	73/01/25.4	73/01/22	73/01/22	2.79	2.79	1
12202	S 9	73/01/27.8	73/01/25	73/01/25	21.75	21.75	1
12199	N19	73/01/28.2	73/01/25	73/01/28	11.21	2.80	2

Note:
The Regional Flare Index and count of flares in each region has in previous months included each maximum of a multi-maximum event. This has caused some regions to appear to be more flare producing than is probably warranted. Beginning with April 1972 only the principal maximum of a multi-maximum event will be used in the calculation. Also note that only the Confirmed Events as selected for the "I.A.U. Quarterly Bulletin on Solar Activity" are included in the calculation.

Because of differences in method of calculation, the dates of Central Meridian Passage for the McMath Plage Regions vary somewhat from those given elsewhere. Any region not listed here produced no confirmed flares during its disk passage.

SGD 348 Part II (Comprehensive)

MISCELLANEOUS DATA

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Cosmic Rays

Chart of Variations - Deep River and Alert,
and Deep River Super Neutron Monitor Daily Values -- May 1973 48

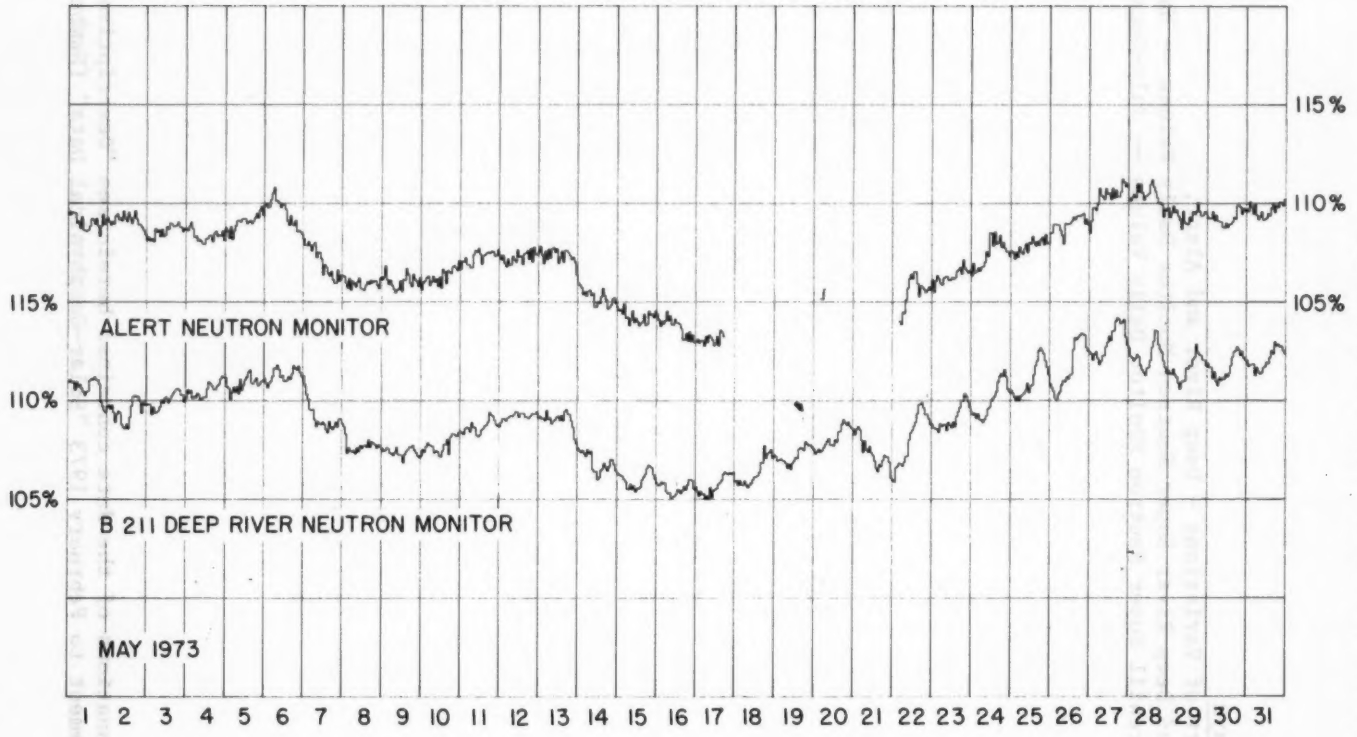
Churchill Super Neutron Monitor Daily Values -- July-December 1972 49

For explanations of the data contained herein see "Descriptive Text" published as supplement to February 1973 "Solar-Geophysical Data" (Number 342).

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

MAY 1973



DAILY AVERAGE
COUNTS PER HOUR

	DEEP RIVER
1	6806.8
2	6736.3
3	6768.3
4	6800.5
5	6820.5
6	6847.9
7	6718.8
8	6630.4
9	6608.5
10	6628.2
11	6686.5
12	6719.3
13	6708.5
14	6575.5
15	6522.5
16	6494.9
17	6502.5
18	6543.5
19	6596.5
20	6649.8
21	6609.1
22	6650.8
23	6714.2
24	6769.3
25	6834.8
26	6874.7
27	6952.2
28	6904.3
29	6869.8
30	6874.3
31	6896.0

COSMIC RAY INDICES

(Neutron Monitors)

CHURCHILL

Date	July 1972 DAILY AVERAGE COUNTS PER HOUR	Aug. 1972 DAILY AVERAGE COUNTS PER HOUR	Sept. 1972 DAILY AVERAGE COUNTS PER HOUR	Oct. 1972 DAILY AVERAGE COUNTS PER HOUR	Nov. 1972 DAILY AVERAGE COUNTS PER HOUR	Dec. 1972 DAILY AVERAGE COUNTS PER HOUR
1	6345.2	6337.5	6270.0	6449.5	5905.3	6425.1
2	6370.7	6333.2	6268.1	6399.3	5945.3	6413.8
3	6381.5	6347.7	6285.0	6347.1	6015.6	6448.4
4	6379.7	6049.7	6343.7	6385.5	6080.3	6464.3
5	6387.4	5384.7	6349.1	6394.2	6212.3	6474.4
6	6402.1	5678.4	6356.7	6431.7	6315.1	6458.6
7	6406.7	5903.3	6314.1	6452.4	6344.2	6458.9
8	6430.5	5959.7	6306.0	6419.3	6328.0	6413.6
9	6444.5	5871.0	6314.2	6427.3	6336.8	6423.1
10	6452.4	5921.9	6318.0	6393.5	6380.2	6447.1
11	6475.5	5993.6	6327.3	6362.8	6400.9	6461.0
12	6464.8(23)	6071.4	6375.5	6378.8	6418.3	6480.7
13	6480.3(22)	6132.7	6365.8	6384.9	6431.8	6424.3
14	6514.4	6153.2	6299.8	6412.9	6460.8	6403.0
15	6535.4	6159.1	6330.8	6467.6	6469.2	6386.7
16	6564.3	6190.1	6372.7	6507.9	6467.2	6349.9
17	6557.8	6231.2	6386.5	6515.8	6467.3	6353.5
18	6559.6	6214.3	6399.1	6530.2	6486.1	6382.0
19	6515.4	6178.0	6410.8	6372.1	6505.9	6407.4
20	6465.8	6174.3	6420.1	6351.0	6474.6	6430.7
21	6422.0	6162.4	6421.7(20)	6381.1	6450.5	6458.5
22	6389.7	6174.3	6414.9	6368.5	6494.8	6437.2
23	6372.2	6204.1	6386.0	6367.3	6498.1	6303.2
24	6368.9	6227.9	6417.6	6386.9	6442.5	6304.1
25	6326.8	6247.3	6432.8	6390.0	6395.4(23)	6340.2
26	6331.3	6285.7	6424.5	6363.8	6368.8	6374.7
27	6339.7	6224.9	6424.4	6361.3	6384.5	6399.2
28	6320.1	6220.2	6459.0	6354.1	6379.6	6364.7
29	6299.6	6222.9	6516.3	6326.4	6398.4	6347.8
30	6288.0	6245.1	6503.4	6297.1	6424.4	6349.0
31	6312.8	6268.8		6171.5		6343.2

( ) Number of hours for which data are available.
Churchill Super-Neutron Monitor, Scaling Factor 120.

Publication Notice

WORLD DATA CENTER A for SOLAR-TERRESTRIAL PHYSICS REPORT UAG
(Prepared by World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado)

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